

SEARCH REQUEST FORM**Scientific and Technical Information Center**

Requester's Full Name: Munique Wills Examiner #: 75068 Date: 5/17/04
 Art Unit: 1746 Phone Number 303 272-1309 Serial Number: 09/865,478
 Mail Box and Bldg/Room Location: 6C71 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Solid Composite Polymer Electrolyte
 Inventors (please provide full names): Yui -Wei Chen Yang, Hung-Chang Chen,
Fu-Luo Lin

Earliest Priority Filing Date: 5/29/2001

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please do a search on claims 1 + 13.

Thanks.

STAFF USE ONLY		Type of Search	Vendors and cost where applicable
Searcher:	<u>Ryanne</u>	NA Sequence (#)	STN <input checked="" type="checkbox"/>
Searcher Phone #:	<u>22546</u>	AA Sequence (#)	Dialog _____
Searcher Location:	<u>E171706</u>	Structure (#)	Questel/Orbit <input checked="" type="checkbox"/>
Date Searcher Picked Up:	<u>5/29/04</u>	Bibliographic	Dr.Link _____
Date Completed:	<u>5/29/04</u>	Litigation	Lexis/Nexis _____
Searcher Prep & Review Time:		Fulltext	Sequence Systems _____
Clerical Prep Time:	<u>60 min</u>	Patent Family	WWW/Internet _____
Online Time:	<u>26</u>	Other	Other (specify) _____

L Number	Hits	Search Text	DB	Time stamp
1	3183	ELECTROLYTE AND POLYACRYLONITRILE	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:06
2	154296	(aluminum adj oxide) or (titanium adj dioxide)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:12
3	451	((ELECTROLYTE AND POLYACRYLONITRILE) and ((aluminum adj oxide) or (titanium adj dioxide)))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:06
4	35	((ELECTROLYTE AND POLYACRYLONITRILE) and ((aluminum adj oxide) or (titanium adj dioxide))) and (lithium adj perchlorate)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:09
5	17	((((ELECTROLYTE AND POLYACRYLONITRILE) and ((aluminum adj oxide) or (titanium adj dioxide))) and (lithium adj perchlorate)) and amorphous	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:10
6	17	(((ELECTROLYTE AND POLYACRYLONITRILE) and ((aluminum adj oxide) or (titanium adj dioxide))) and (lithium adj perchlorate)) and amorphous and (composite or composition)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:10
7	36038	((aluminum adj oxide) or (titanium adj dioxide)) and ceramic	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:12
8	163	((ELECTROLYTE AND POLYACRYLONITRILE) and ((aluminum adj oxide) or (titanium adj dioxide)) and ceramic)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:12
9	18	((ELECTROLYTE AND POLYACRYLONITRILE) and ((aluminum adj oxide) or (titanium adj dioxide)) and ceramic)) and (lithium adj perchlorate)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:13
10	738	(ELECTROLYTE AND POLYACRYLONITRILE) and filler	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:13
11	208	((ELECTROLYTE AND POLYACRYLONITRILE) and filler) and ((aluminum adj oxide) or (titanium adj dioxide))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:13
12	7	((ELECTROLYTE AND POLYACRYLONITRILE) and filler) and ((aluminum adj oxide) or (titanium adj dioxide))) and (lithium near perchlorate)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:14

lithium polymer battery

L23 ANSWER 34 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Solid acrylic polymer-containing electrolytes for
lithium secondary batteries

L23 ANSWER 35 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Secondary batteries with solid polymer
electrolytes

=> d ibib abs hitstr ind total

L23 ANSWER 1 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2004:182342 CAPLUS
DOCUMENT NUMBER: 140:202487
TITLE: Rechargeable composite polymer
battery with high energy density
INVENTOR(S): Rodriguez, Rafael; Abraham, Kuzhikalail M.; Dicarlo,
Joseph
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 11 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

Vetru

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004043295	A1	20040304	US 2003-645154	20030821
PRIORITY APPLN. INFO.:			US 2002-405162P P	20020821

AB Rechargeable composite polymer batteries are disclosed employing composite polymer electrolytes comprising an inorg. oxide, exemplified by fumed SiO₂, and an organic polymer, exemplified by poly(vinylidene fluoride)-hexafluoropropene copolymer, gelled with Li-ion battery electrolytes. The composite polymer electrolytes are prepared by forming a suspension of the inorg. oxide in a solution of the organic polymer contained in a suitable carrier solvent, spraying the suspension onto the surfaces of Li-ion battery electrodes to form inorg. oxide-organic polymer composite films that adhere to the electrode surfaces, and gelling the films with Li-ion battery electrolytes in-situ to form composite inorg. oxide-organic polymer gel electrolytes. Li-ion battery cells are then constructed with the resulting electrode-polymer electrolytes.

IT 1344-28-1, Alumina, uses 7791-03-9, Lithium perchlorate 13463-67-7, Titania, uses 25014-41-9, Polyacrylonitrile
RL: DEV (Device component use); USES (Uses)
(rechargeable composite polymer battery)

- L23 ANSWER 21 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Gel **electrolytic** precursor and manufacturing of non-aqueous secondary **battery**
- L23 ANSWER 22 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Fabrication of a **lithium** secondary **battery** comprising a superfine fibrous **polymer electrolyte**
- L23 ANSWER 23 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Fabrication of a **lithium** secondary **battery** comprising a superfine fibrous **polymer separator film**
- L23 ANSWER 24 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Fabrication of **composite polymer electrolyte** and a **lithium** secondary **battery** comprising the **composite polymer electrolyte**
- L23 ANSWER 25 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Fabrication method of **lithium** secondary **battery** with **hybrid polymer electrolyte**
- L23 ANSWER 26 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Method of producing ion conductive laminate for **electrolyte** application in **electrochemical** cells
- L23 ANSWER 27 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Polymer electrolyte** elements, manufacture of the elements and rolls of the elements, the **polymer electrolyte** element rolls, and manufacture of **batteries**
- L23 ANSWER 28 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Polymer electrolyte** membrane for use in **lithium** batteries
- L23 ANSWER 29 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI All-solid-state **electrochemical** device and method of manufacturing
- L23 ANSWER 30 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Improved **lithium** ion **polymer electrolytes** and methods of manufacturing an **electrochemical** cell
- L23 ANSWER 31 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Microporous solid **electrolytes** for **lithium** secondary **batteries**
- L23 ANSWER 32 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Solid **electrolytes** using absorbent for rechargeable **lithium** batteries
- L23 ANSWER 33 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI The characteristics of **polymer electrolyte** for

Page 1Wills09865478

=> file reg
FILE 'REGISTRY' ENTERED AT 13:49:59 ON 21 MAY 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2004 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 20 MAY 2004 HIGHEST RN 684211-73-2
DICTIONARY FILE UPDATES: 20 MAY 2004 HIGHEST RN 684211-73-2

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2004

Please note that search-term pricing does apply when conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more information enter HELP PROP at an arrow prompt in the file or refer to the file summary sheet on the web at:
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> file caplus
FILE 'CAPLUS' ENTERED AT 13:50:04 ON 21 MAY 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2004 AMERICAN CHEMICAL SOCIETY (ACS)

Copyright of the articles to which records in this database refer is held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after December 26, 1996), unless otherwise indicated in the original publications. The CA Lexicon is the copyrighted intellectual property of the American Chemical Society and is provided to assist you in searching databases on STN. Any dissemination, distribution, copying, or storing of this information, without the prior written consent of CAS, is strictly prohibited.

FILE COVERS 1907 - 21 May 2004 VOL 140 ISS 22
FILE LAST UPDATED: 20 May 2004 (20040520/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d que 123
L5 STR

P==N
1 2

NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 2

STEREO ATTRIBUTES: NONE
L6 STR
C~C
1 2

NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 2

STEREO ATTRIBUTES: NONE
L9 STR
O~Ak C==N
@3 4 @1 @2

G1 5

VAR G1=3/1/2
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

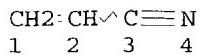
GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 5

STEREO ATTRIBUTES: NONE
L11 1 SEA FILE=REGISTRY ABB=ON PLU=ON 7791-03-9
L12 1 SEA FILE=REGISTRY ABB=ON PLU=ON 1344-28-1
L13 2 SEA FILE=REGISTRY ABB=ON PLU=ON "TITANIUM OXIDE"/CN
L14 SCR 2043

secondary battery

- L23 ANSWER 9 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Electrochemical device using multicomponent composite membrane film**
- L23 ANSWER 10 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Polyacrylonitrile **electrolytes** 1. A novel high-conductivity **composite polymer electrolyte** based on PAN, LiClO₄ and α -Al₂O₃
- L23 ANSWER 11 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI A multi-layered, UV-cured **polymer electrolyte** for **lithium secondary battery**
- L23 ANSWER 12 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Fabrication of **lithium secondary battery** with a UV-cured multi-component **polymer** blend **electrolyte**
- L23 ANSWER 13 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Secondary Li ion **battery** using colloidal **polymer** as **electrolyte** and its preparing process
- L23 ANSWER 14 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Multicomponent **composite** film and method for preparing the same
- L23 ANSWER 15 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**
- L23 ANSWER 16 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Fabrication method for **lithium secondary battery** with **polymer electrolyte** prepared by spray method
- L23 ANSWER 17 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI A **lithium secondary battery** comprising **composite polymer electrolyte** fabricated by a spray method
- L23 ANSWER 18 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Fabrication of a **lithium secondary battery** comprising a hybrid **polymer electrolyte** prepared by a spray method
- L23 ANSWER 19 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI A **lithium secondary battery** comprising a porous **polymer separator** film fabricated by a spray method
- L23 ANSWER 20 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Gel **electrolytic** precursor and manufacturing of non-aqueous **secondary battery**

L17 STR



NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 4

STEREO ATTRIBUTES: NONE

L19 17649 SEA FILE=REGISTRY SSS FUL L17 AND (L5 OR L6) AND L9 AND L14
L20 35 SEA FILE=CAPLUS ABB=ON PLU=ON L19 AND L11 AND (L12 OR L13)
L23 35 SEA FILE=CAPLUS ABB=ON PLU=ON L20 AND (COMPOSIT? OR POLYMER?
OR ELECTROLY? OR ELECTROCHEM? OR BATTER? OR LITHIUM?)

=> d ti 1-35

L23 ANSWER 1 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

TI Rechargeable composite polymer battery with
high energy density

L23 ANSWER 2 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

TI Chemical sensors utilizing conducting polymer
compositions

L23 ANSWER 3 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

TI Method for producing cathode for lithium-sulfur battery

L23 ANSWER 4 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

TI Understanding of Effects of Nano-Al₂O₃ Particles on Ionic Conductivity of
Composite Polymer Electrolytes

L23 ANSWER 5 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

TI Stable high-voltage composite polymer
electrolytes for secondary lithium nonaqueous-
electrolyte batteries

L23 ANSWER 6 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

TI Polymer electrolyte comprising fluoride copolymer for
lithium battery

L23 ANSWER 7 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

TI Battery structures, self-organizing structures, and related
methods

L23 ANSWER 8 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

TI Solid composite polymer electrolyte for

Solar, Armando; Rutherford, Larris Andrew; Westerheim,
Daniel
PATENT ASSIGNEE(S) : USA
SOURCE: U.S. Pat. Appl. Publ., 18 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004040841	A1	20040304	US 2002-234980	20020904
PRIORITY APPLN. INFO.:			US 2002-234980	20020904

AB A chemical sensor for detecting the presence of one or more analytes. The sensor comprises at least one electrode pair and a photopolymerd. elec. conducting polymer composition disposed in contact between each of the electrode pairs. Each polymer composition may include an organic polymer capable of interacting with one or more analytes. The sensor also comprises a means for delivering an analyte to each polymer composition, and a means for processing the resultant electronic signal from each polymer composition and electrode pair. Preferably, the sensor comprises a plurality of different polymer compns., each with a dedicated electrode pair, to generate a collection of signals that provide a fingerprint unique to a particular analyte.

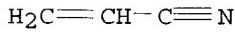
IT 9003-56-9, Polyacrylonitrile-butadiene-styrene 9010-76-8
, Polyvinylidene chloride-acrylonitrile
RL: ARG (Analytical reagent use); DEV (Device component use); ANST (Analytical study); USES (Uses)
(chemical vapor sensing and identification by gas sensors based on conducting polymer compns.)

RN 9003-56-9 CAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene (9CI) (CA INDEX NAME)

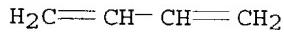
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 106-99-0
CMF C4 H6



CM 3

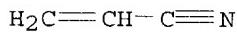
CRN 100-42-5
CMF C8 H8



RN 9010-76-8 CAPLUS
CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)

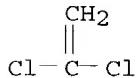
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 75-35-4
CMF C2 H2 Cl2

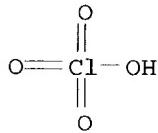


IT 1344-28-1, Alumina, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(chemical vapor sensing and identification by gas sensors based on conducting polymer compns.)
RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7791-03-9, Lithium perchlorate
RL: ARU (Analytical role, unclassified); DEV (Device component use); MOA (Modifier or additive use); ANST (Analytical study); USES (Uses)
(chemical vapor sensing and identification by gas sensors based on conducting polymer compns.)
RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM G01N027-26
NCL 204406000
CC 79-2 (Inorganic Analytical Chemistry)
Section cross-reference(s): 38, 59, 80
ST conducting **polymer** gas sensor
IT Polyamides, uses
RL: ARG (Analytical reagent use); DEV (Device component use); ANST
(Analytical study); USES (Uses)
(acrylic; chemical vapor sensing and identification by gas sensors based
on conducting **polymer compns.**)
IT Polycarbonates, uses
RL: ARG (Analytical reagent use); DEV (Device component use); ANST
(Analytical study); USES (Uses)
(bisphenol-based; chemical vapor sensing and identification by gas sensors
based on conducting **polymer compns.**)
IT Chemical warfare agents
Computers
Conducting **polymers**
Dopants
Electric circuits
Electric resistance
Gas analysis
Gas sensors
Heaters
Memory devices
Odor and Odorous substances
Printed circuit boards
Thermocouples
Vapors
(chemical vapor sensing and identification by gas sensors based on
conducting **polymer compns.**)
IT Volatile organic compounds
RL: ANT (Analyte); ANST (Analytical study)
(chemical vapor sensing and identification by gas sensors based on
conducting **polymer compns.**)
IT Fluoropolymers, uses
Polyamides, uses
Polyanilines
Polyesters, uses

Polyoxyalkylenes, uses
Polyoxymethylene, uses
Polysulfones, uses
Polyvinyl butyrals
RL: ARG (Analytical reagent use); DEV (Device component use); ANST (Analytical study); USES (Uses)
(chemical vapor sensing and identification by gas sensors based on conducting polymer compns.)
IT Toxicants
(industrial; chemical vapor sensing and identification by gas sensors based on conducting polymer compns.)
IT Electrodes
(interdigitated; chemical vapor sensing and identification by gas sensors based on conducting polymer compns.)
IT Acrylic polymers, uses
RL: ARG (Analytical reagent use); DEV (Device component use); ANST (Analytical study); USES (Uses)
(polyamide-; chemical vapor sensing and identification by gas sensors based on conducting polymer compns.)
IT 50-00-0, Formaldehyde, analysis 56-23-5, Tetrachloromethane, analysis 64-17-5, Ethanol, analysis 67-56-1, Methanol, analysis 67-64-1, Acetone, analysis 67-66-3, Chloroform, analysis 71-43-2, Benzene, analysis 79-01-6, Trichloroethylene, analysis 108-88-3, Toluene, analysis 683-08-9, Diethylmethyl phosphonate 693-07-2, 2-Chloroethyl ethyl sulfide 756-79-6, Dimethylmethyl phosphonate 5535-49-9, 2-Chloroethyl phenyl sulfide 7664-41-7, Ammonia, analysis 7732-18-5, Water, analysis
RL: ANT (Analyte); ANST (Analytical study)
(chemical vapor sensing and identification by gas sensors based on conducting polymer compns.)
IT 9002-84-0, Polytetrafluoroethylene 9002-86-2, Poly vinyl chloride 9002-88-4, Polyethylene 9002-89-5, Poly vinyl alcohol 9003-01-4, Polyacrylic acid 9003-07-0, Polypropylene 9003-07-0D, Polypropylene, chlorinated 9003-20-7, Poly vinyl acetate 9003-39-8, Poly N-vinylpyrrolidone 9003-42-3, Polyethyl methacrylate 9003-53-6D, Polystyrene, chlorinated 9003-56-9, Polyacrylonitrile-butadiene-styrene 9003-63-8, Poly-n-butyl methacrylate 9006-26-2, Polyethylene-maleic anhydride 9008-66-6, Polyhexamethylenesabacamide 9010-76-8, Polyvinylidene chloride-acrylonitrile 9010-77-9, Polyethylene-acrylic acid 9011-06-7, Polyvinylidene chloride-vinyl chloride 9011-13-6, Polystyrene/maleic anhydride 9011-14-7, Polymethyl methacrylate 9011-15-8, Poly-isobutyl methacrylate 9011-16-9, Poly vinyl methyl ether-maleic anhydride 9011-52-3 9011-53-4, Poly-n-butyl methacrylate-isobutyl methacrylate 24936-74-1 24937-16-4, Polylaurolactam 24937-78-8, Polyethylenevinyl acetate 24937-79-9, Polyvinylidene fluoride 24979-70-2, Poly-4-vinylphenol 24980-41-4, Poly caprolactone 25014-31-7, Poly- α -methylstyrene 25038-54-4, Poly caprolactam, uses 25038-74-8, Polylaurolactam 25119-62-4, Polystyrene-allyl alcohol 25233-30-1, Polyaniline 25233-34-5, Polythiophene 25248-42-4, Poly caprolactone 25322-68-3, Polyethylene oxide 26098-55-5, Polyhexamethylenedodecanediamide 28158-18-1 30604-81-0, Polypyrrole 32131-17-2, Polyhexamethyleneadipamide, uses

59049-12-6 479355-50-5

RL: ARG (Analytical reagent use); DEV (Device component use); ANST (Analytical study); USES (Uses)

(chemical vapor sensing and identification by gas sensors based on conducting polymer compns.)

IT 1344-28-1, Alumina, analysis 7440-32-6, Titanium, analysis

RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)

(chemical vapor sensing and identification by gas sensors based on conducting polymer compns.)

IT 127-68-4, 3-Nitrobenzenesulfonic acid sodium salt 131-08-8,

Anthraquinone-2-sulfonic acid sodium salt 3144-16-9, Camphorsulfonic

acid 5324-84-5, 1-Octanesulfonic acid sodium salt 6149-03-7,

4-Octylbenzenesulfonic acid sodium salt 6192-52-5, p-Toluenesulfonic acid monohydrate 7791-03-9, Lithium perchlorate

RL: ARU (Analytical role, unclassified); DEV (Device component use); MOA (Modifier or additive use); ANST (Analytical study); USES (Uses)

(chemical vapor sensing and identification by gas sensors based on conducting polymer compns.)

L23 ANSWER 3 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:119840 CAPLUS

DOCUMENT NUMBER: 140:149223

TITLE: Method for producing cathode for lithium-sulfur battery

INVENTOR(S): Hwang, Duck-chul; Park, Zin; Lee, Jae-woan

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 11 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004029014	A1	20040212	US 2003-634748	20030806
JP 2004071566	A2	20040304	JP 2003-283959	20030731

PRIORITY APPLN. INFO.: KR 2002-46581 A 20020807

AB The invention concerns a pos. electrode of a lithium-sulfur battery, a method of producing the same, and a lithium-sulfur battery include, as the pos. electrode, a current collector, a pos. active material layer on the current collector, and a polymer layer on the pos. active material on the current collector.

IT 9003-56-9

RL: DEV (Device component use); USES (Uses)
(abs rubber, method for producing cathode for lithium-sulfur battery)

RN 9003-56-9 CAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene (9CI) (CA INDEX NAME)

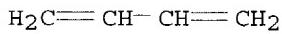
CM 1

CRN 107-13-1
CMF C3 H3 N



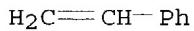
CM 2

CRN 106-99-0
CMF C4 H6



CM 3

CRN 100-42-5
CMF C8 H8



IT 1344-28-1, Alumina, uses

RL: DEV (Device component use); USES (Uses)
(colloidal; method for producing cathode for lithium-sulfur
battery)

RN 1344-28-1 CAPLUS

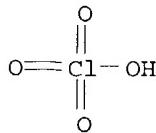
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7791-03-9, Lithium perchlorate 13463-67-7,
Titanium oxide, uses 25014-41-9, Polyacrylonitrile
RL: DEV (Device component use); USES (Uses)
(method for producing cathode for lithium-sulfur
battery)

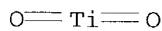
RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 13463-67-7 CAPLUS
CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C₃ H₃ N



IT 9003-18-3
RL: DEV (Device component use); USES (Uses)
(nitrile rubber, method for producing cathode for lithium
-sulfur battery)
RN 9003-18-3 CAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

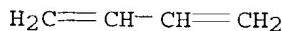
CM 1

CRN 107-13-1
CMF C₃ H₃ N



CM 2

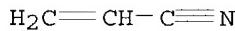
CRN 106-99-0
CMF C₄ H₆



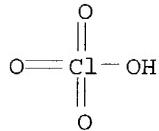
IC ICM H01M002-16
ICS H01M004-60; H01M004-58
NCL 429246000; 429251000; 429252000; 429218100; 429213000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST cathode **lithium** sulfur **battery**
IT Polyurethanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(acrylates, ethoxylated; method for producing cathode for
lithium-sulfur battery)
IT Styrene-butadiene rubber, uses
RL: DEV (Device component use); USES (Uses)
(hydrogenated, block, triblock, sulfonated; method for producing
cathode for **lithium-sulfur battery**)
IT Primary batteries
(**lithium**; method for producing cathode for **lithium**-
sulfur battery)
IT **Battery** cathodes
(method for producing cathode for **lithium-sulfur**
battery)
IT ABS rubber
Fluoropolymers, uses
Nitrile rubber, uses
Polyolefins
Polyoxyalkylenes, uses
Styrene-butadiene rubber, uses
RL: DEV (Device component use); USES (Uses)
(method for producing cathode for **lithium-sulfur**
battery)
IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(method for producing cathode for **lithium-sulfur**
battery)
IT 9003-56-9
RL: DEV (Device component use); USES (Uses)
(abs rubber, method for producing cathode for **lithium-sulfur**
battery)
IT 1344-28-1, Alumina, uses 7631-86-9, Colloidal silica, uses
RL: DEV (Device component use); USES (Uses)
(colloidal; method for producing cathode for **lithium-sulfur**
battery)
IT 10344-93-1D, Acrylate, alkyl derivative
RL: TEM (Technical or engineered material use); USES (Uses)
(ethoxylated; method for producing cathode for **lithium-sulfur**
battery)
IT 110-71-4 111-96-6, Diglyme 126-33-0, Sulfolane 646-06-0,
1,3-Dioxolane 1314-23-4, Zirconium oxide, uses 1332-29-2, Tin oxide
1332-37-2, Iron oxide, uses 7439-93-2, **Lithium**, uses

7440-44-0, Carbon, uses 7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, organic compound 7791-03-9, **Lithium perchlorate**
9002-89-5, Polyvinyl alcohol 9003-19-4, Polyvinyl ether 9003-20-7, Polyvinyl acetate 9003-22-9, Vinyl acetate-vinyl chloride copolymer 9003-39-8, Polyvinylpyrrolidone 9004-35-7, Cellulose acetate 9010-88-2, Ethyl acrylate-methylmethacrylate copolymer 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 11075-35-7, Vanadium titanium oxide 11099-11-9, Vanadium oxide 11126-12-8, Iron sulfide 12673-92-6, Titanium sulfide 12789-64-9, Iron titanate 13463-67-7, Titanium oxide, uses 14283-07-9, **Lithium tetrafluoroborate** 21324-40-3, **Lithium hexafluorophosphate** 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl acetate-vinylpyrrolidone copolymer 25322-68-3, Peo 27360-07-2, Vinyl acetate-vinyl alcohol-divinyl butyral copolymer 29935-35-1, **Lithium hexafluoroarsenate** 33454-82-9, **Lithium triflate** 49717-87-5, 2-Propenoic acid, ion(1-) homopolymer, uses 49717-97-7, 2-Propenoic acid, 2-methyl-, ion(1-) homopolymer, uses 69822-67-9, Poly(carbon sulfide) 90076-65-6, **Lithium bis(trifluoromethylsulfonyl)imide**
RL: DEV (Device component use); USES (Uses)
(method for producing cathode for **lithium-sulfur battery**)
IT 7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses 7440-24-6, Strontium, uses 7440-28-0, Thallium, uses 7440-36-0, Antimony, uses 7440-38-2, Arsenic, uses 7440-56-4, Germanium, uses 7440-69-9, Bismuth, uses 7440-70-2, Calcium, uses 7440-74-6, Indium, uses 7553-56-2, Iodine, uses 7726-95-6, Bromine, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(method for producing cathode for **lithium-sulfur battery**)
IT 9003-18-3
RL: DEV (Device component use); USES (Uses)
(nitrile rubber, method for producing cathode for **lithium-sulfur battery**)
IT 2223-82-7D, Neopentyl glycol diacrylate, ethoxylated 4491-03-6D, Bisphenol A diacrylate, ethoxylated 7429-90-5, Aluminum, uses 7440-39-3, Barium, uses 7440-42-8, Boron, uses 7723-14-0, Phosphorus, uses 7727-37-9, Nitrogen, uses 7782-41-4, Fluorine, uses 7782-44-7, Oxygen, uses 7782-50-5, Chlorine, uses 26570-48-9, Polyethylene glycol diacrylate 52496-08-9, Polypropylene glycol diacrylate
RL: TEM (Technical or engineered material use); USES (Uses)
(protective coating; method for producing cathode for **lithium-sulfur battery**)
IT 9003-55-8
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, hydrogenated, block, triblock, sulfonated; method for producing cathode for **lithium-sulfur battery**)
IT 9003-55-8
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, method for producing cathode for **lithium-sulfur battery**)

L23 ANSWER 4 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:765410 CAPLUS
DOCUMENT NUMBER: 140:29424
TITLE: Understanding of Effects of Nano-Al₂O₃ Particles on Ionic Conductivity of Composite Polymer Electrolytes
AUTHOR(S): Wang, Zhaoxiang; Huang, Xuejie; Chen, Liquan
CORPORATE SOURCE: Institute of Physics, Laboratory for Solid State Ionics, Chinese Academy of Sciences, Beijing, 100080, Peop. Rep. China
SOURCE: Electrochemical and Solid-State Letters (2003), 6(11), E40-E44
CODEN: ESLEF6; ISSN: 1099-0062
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Nanosized Al₂O₃ was added to a polyacrylonitrile-LiClO₄ electrolyte. IR absorption spectroscopy was used to study the influence of Al₂O₃ on the ionic association in the composite electrolyte. The nano-Al₂O₃ filler aided the dissoln. of the salt and the dissociation of nitrile-Li⁺ interaction in the dry composite . Taking into account Lewis acid-base type interactions of the surface groups on nano-Al₂O₃ particles with the ions and with the polymer and using exptl. results, an interpretation of the enhancement of ionic conductivity and transference number of the composite polymer electrolyte by the nanoscale ceramic particles, is presented.
IT 1344-28-1, Alumina, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(effect of Al₂O₃ nanoparticles on ionic conductivity of composite polymer electrolytes for lithium batteries)
RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT 25014-41-9, Polyacrylonitrile
RL: DEV (Device component use); USES (Uses)
(electrolyte containing; effect of Al₂O₃ nanoparticles on ionic conductivity of composite polymer electrolytes for lithium batteries)
RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)
CM 1
CRN 107-13-1
CMF C3 H3 N



IT 7791-03-9, Lithium perchlorate (LiClO₄)
RL: DEV (Device component use); USES (Uses)
(electrolyte; effect of Al₂O₃ nanoparticles on ionic conductivity of composite polymer electrolytes for lithium batteries)
RN 7791-03-9 CAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
ST alumina nanoparticle composite polymer electrolyte ionic cond lithium battery
IT Battery electrolytes
Ionic conductivity
Nanoparticles
Polymer electrolytes
(effect of Al₂O₃ nanoparticles on ionic conductivity of composite polymer electrolytes for lithium batteries)
IT 1344-28-1, Alumina, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(effect of Al₂O₃ nanoparticles on ionic conductivity of composite polymer electrolytes for lithium batteries)
IT 25014-41-9, Polyacrylonitrile
RL: DEV (Device component use); USES (Uses)
(electrolyte containing; effect of Al₂O₃ nanoparticles on ionic conductivity of composite polymer electrolytes for lithium batteries)
IT 7791-03-9, Lithium perchlorate (LiClO₄)
RL: DEV (Device component use); USES (Uses)
(electrolyte; effect of Al₂O₃ nanoparticles on ionic conductivity of composite polymer electrolytes for lithium batteries)

REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 5 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:591497 CAPLUS
DOCUMENT NUMBER: 139:152300
TITLE: *B D*
Stable high-voltage composite
polymer electrolytes for secondary
lithium nonaqueous-electrolyte
batteries
INVENTOR(S): Zaghib, Karim; Perrier, Michel; Guerfi, Abdelbast;
Dupuis, Elisabeth; Charest, Patrick; Allaire,
Francois; Armand, Michel
PATENT ASSIGNEE(S): Hydro-Quebec, Can.
SOURCE: PCT Int. Appl., 46 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003063287	A2	20030731	WO 2003-CA52	20030115
WO 2003063287	A3	20031204		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,
UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD,
RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG,
CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC,
NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: CA 2002-2367290 A 20020116

AB A composite polymer electrolyte for an
electrochem. generator (especially a secondary lithium
battery) consists of: (1) a star-branched polymer with
four branches containing terminating (meth)acrylate, C1-8-alkoxy, and vinyl
groups, (2) polyvinylidene difluoride (mol. weight 100,000-250,000), (3)
vinylidene difluoride-hexafluoropropene copolymer (mol. weight
100,000-250,000), (4) PTFE (mol. weight 200,000), (5) ethylene-propylene-5-
methylene-2-norbornene copolymer or EPDM rubber, (6) polyvinyl alc. or a
substituted polyvinyl alc., (7) poly(C2-3-alkoxylated) glycerol or
trimethylolpropane, crosslinked and isocyanate-terminated, (8) poly(Me
methacrylate) (mol. weight 50,000-500,000), (9) polyacrylonitrile (mol. weight
20,000-200,000), (10) SiO₂-Al₂O₃, and (11) TiO₂ nanoparticles, optionally
coated with an organic material. The composite polymer
electrolyte, which can be crosslinked (e.g., by radical
initiators), also contains associated conducting salts, especially lithium
salts, and organic solvents, especially carbonates, lactones, and tetra-Et
sulfamide. A suitable anode for use with this composite

electrolyte is preferably Al-Li alloy, Li_{4.4}Sn₂₂, Li₄Ti₅O₁₂; suitable cathodes are LiCoPo₄ or Li(Mn_{0.66}Ni_{0.34})O₂.

IT 1344-28-1, Alumina, uses 25014-41-9, Polyacrylonitrile
RL: DEV (Device component use); USES (Uses)
(composite polyelectrolyte containing; stable high-voltage
composite polymer electrolytes for
secondary lithium nonaq.-electrolyte
batteries)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

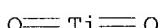
CMF C₃ H₃ N



IT 13463-67-7, Titania, uses
RL: DEV (Device component use); USES (Uses)
(nanocryst., composite polyelectrolyte containing; stable
high-voltage composite polymer electrolytes
for secondary lithium nonaq.-electrolyte
batteries)

RN 13463-67-7 CAPLUS

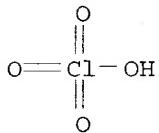
CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



IT 7791-03-9, Lithium perchlorate
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte containing; stable high-voltage
composite polymer electrolytes for
secondary lithium nonaq.-electrolyte
batteries)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40
ICS H01G009-02; C08F290-06; C08G065-329
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST high voltage stable **polymer battery**
electrolyte composite; star branched **polymer**
battery electrolyte composite; EPDM rubber
polymer battery electrolyte composite
; nonaq **battery electrolyte composite**
polymer
IT EPDM rubber
Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(**composite polyelectrolyte containing**; stable high-voltage
composite polymer electrolytes for
secondary lithium nonaq.-electrolyte
batteries)
IT Polyanilines
RL: DEV (Device component use); USES (Uses)
(conducting; stable high-voltage **composite polymer**
electrolytes for secondary lithium nonaq.-
electrolyte batteries)
IT **Battery electrolytes**
(nonaq.; stable high-voltage **composite polymer**
electrolytes for secondary lithium nonaq.-
electrolyte batteries)
IT Conducting **polymers**
(polythiophenes; stable high-voltage **composite**
polymer electrolytes for secondary lithium
nonaq.-electrolyte batteries)
IT **Battery anodes**
Battery cathodes
Polymer electrolytes
(stable high-voltage **composite polymer**
electrolytes for secondary lithium nonaq.-
electrolyte batteries)
IT Acrylic **polymers**, uses
Polymers, uses
RL: DEV (Device component use); USES (Uses)
(star-branched; stable high-voltage **composite polymer**
electrolytes for secondary lithium nonaq.-

electrolyte batteries)

IT Capacitor electrodes
(supercapacitors; stable high-voltage composite polymer electrolytes for secondary lithium nonaq.-electrolyte batteries)

IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(battery anode; stable high-voltage composite polymer electrolytes for secondary lithium nonaq.-electrolyte batteries)

IT 12031-95-7, Lithium titanium oxide (Li₄Ti₅O₁₂) 37197-42-5
143295-45-8
RL: DEV (Device component use); USES (Uses)
(battery anode; stable high-voltage composite polymer electrolytes for secondary lithium nonaq.-electrolyte batteries)

IT 13824-63-0, Cobalt lithium phosphate (CoLiPO₄) 569361-59-7,
Lithium manganese nickel oxide (LiMn_{0.66}Ni_{0.34}O₂)
RL: DEV (Device component use); USES (Uses)
(battery cathode; stable high-voltage composite polymer electrolytes for secondary lithium nonaq.-electrolyte batteries)

IT 56-81-5D, Glycerol, poly(C₂-3-alkoxylated) derivs., isocyanate-terminated
77-99-6D, Trimethylolpropane, poly(C₂-3-alkoxylated) derivs.,
isocyanate-terminated 1344-28-1, Alumina, uses 7631-86-9,
Silica, uses 9002-84-0, PTFE 9002-89-5, Polyvinyl alcohol
9002-89-5D, Polyvinyl alcohol, O-derivs. 9011-14-7, Polymethyl
methacrylate 9011-17-0 24937-79-9, Polyvinylidene difluoride
25014-41-9, Polyacrylonitrile 25034-77-9 570375-13-2, Elexcel
MP 210-1
RL: DEV (Device component use); USES (Uses)
(composite polyelectrolyte containing; stable high-voltage composite polymer electrolytes for secondary lithium nonaq.-electrolyte batteries)

IT 13463-67-7, Titania, uses
RL: DEV (Device component use); USES (Uses)
(nanocryst., composite polyelectrolyte containing; stable high-voltage composite polymer electrolytes for secondary lithium nonaq.-electrolyte batteries)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,
Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl carbonate 2832-49-7, Tetraethyl sulfamide 7791-03-9, Lithium perchlorate 14283-07-9,
Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6 132404-42-3
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte containing; stable high-voltage composite polymer electrolytes for

secondary lithium nonaq.-electrolyte
batteries)

L23 ANSWER 6 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:511916 CAPLUS
DOCUMENT NUMBER: 139:71608
TITLE: **Polymer electrolyte** comprising
fluoride copolymer for lithium
battery
INVENTOR(S): Hwang, Seung-Sik; Cho, Myung-Dong
PATENT ASSIGNEE(S): S. Korea
SOURCE: U.S. Pat. Appl. Publ., 20 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003124431	A1	20030703	US 2002-238714	20020911
CN 1412236	A	20030423	CN 2002-127041	20020726
JP 2003201319	A2	20030718	JP 2002-302629	20021017

PRIORITY APPLN. INFO.: KR 2001-63952 A 20011017

AB Provided are a fluoride copolymer, a **polymer electrolyte** comprising the fluoride copolymer, and a **lithium battery** employing the **polymer electrolyte**. The **polymer electrolyte** preferably includes as the fluoride copolymer at least one fluoride **polymer** selected from a polyethylene glycol methylether (meth)acrylate (PEGMA)-2,2,2-trifluoroethylacrylate (TFEA) **polymer**, a PEGMA-TFEA-acrylonitrile **polymer**, a PEGMA-TFEA-Me methacrylate **polymer**, a PEGMA-TFEA-vinylpyrrolidone **polymer**, a PEGMA-TFEA-trimethoxyvinylsilane **polymer**, and a PEGMA-TFEA-ethoxy ethylacrylate **polymer**.

IT 1344-28-1, Alumina, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filler; **polymer electrolyte** comprising fluoride copolymer for lithium **battery**)

RN 1344-28-1 CAPLUS

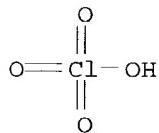
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7791-03-9, Lithium perchlorate
RL: DEV (Device component use); USES (Uses)
(**polymer electrolyte** comprising fluoride copolymer for lithium **battery**)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 551936-02-8P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(polymer electrolyte comprising fluoride copolymer
for lithium battery)

RN 551936-02-8 CAPLUS

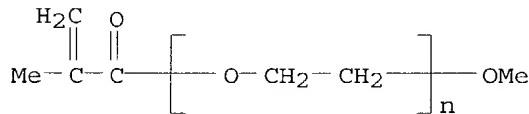
CN 2-Propenoic acid, 2,2,2-trifluoroethyl ester, polymer with
 α - (2-methyl-1-oxo-2-propenyl)- ω -methoxypoly(oxy-1,2-
ethanediyl) and 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 26915-72-0

CMF (C₂ H₄ O)_n C₅ H₈ O₂

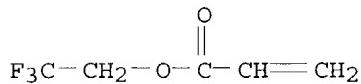
CCI PMS



CM 2

CRN 407-47-6

CMF C₅ H₅ F₃ O₂



CM 3

CRN 107-13-1

CMF C₃ H₃ N



IC ICM H01M010-40
ICS C08J005-20; C08F018-20
NCL 429316000; 429317000; 429309000; 429307000; 528401000; 521025000;
526246000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **polymer electrolyte fluoride copolymer lithium**
battery
IT Ceramics
 (filler; **polymer electrolyte** comprising fluoride
 copolymer for **lithium battery**)
IT Zeolites (synthetic), uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (filler; **polymer electrolyte** comprising fluoride
 copolymer for **lithium battery**)
IT Secondary batteries
 (lithium; **polymer electrolyte** comprising
 fluoride copolymer for **lithium battery**)
IT **Battery electrolytes**
Ionic conductivity
Mechanical properties
 (**polymer electrolyte** comprising fluoride copolymer
 for **lithium battery**)
IT Fluoropolymers, uses
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic
 preparation); PREP (Preparation); USES (Uses)
 (**polymer electrolyte** comprising fluoride copolymer
 for **lithium battery**)
IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 37220-89-6,
Lithium aluminate
 RL: MOA (Modifier or additive use); USES (Uses)
 (filler; **polymer electrolyte** comprising fluoride
 copolymer for **lithium battery**)
IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 108-32-7,
Propylene carbonate 110-71-4 111-96-6, Diethylene glycol dimethyl
ether 126-33-0, Sulfolane 143-24-8, Tetraethylene glycol dimethyl
ether 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
623-96-1, Dipropyl carbonate 646-06-0, Dioxolane 7439-93-2,
Lithium, uses 7440-44-0, Carbon, uses 7704-34-9, Sulfur, uses
7782-42-5, Graphite, uses 7791-03-9, **Lithium**
perchlorate 12057-17-9, **Lithium** manganese oxide limn₂o₄
12162-79-7, **Lithium** manganese oxide limno₂ 12190-79-3, Cobalt
lithiumoxide colio₂ 14283-07-9, **Lithium**
tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate
24991-55-7, Polyethylene glycol dimethyl ether 33454-82-9,
Lithium triflate 73506-93-1, Diethoxyethane 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (**polymer electrolyte** comprising fluoride copolymer

for lithium battery)
IT 551936-01-7P 551936-02-8P 551936-03-9P 551936-04-0P
551936-05-1P 551936-06-2P
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(polymer electrolyte comprising fluoride copolymer
for lithium battery)

L23 ANSWER 7 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:118181 CAPLUS
DOCUMENT NUMBER: 138:156304
TITLE: Battery structures, self-organizing
structures, and related methods
INVENTOR(S): Chiang, Yet-Ming; Moorehead, William Douglas; Holman,
Richard K.; Viola, Michael S.; Gozdz, Antoni S.;
Loxley, Andrew; Riley, Gilbert N., Jr.
PATENT ASSIGNEE(S): Massachusetts Institute of Technology, USA; A123
Systems
SOURCE: PCT Int. Appl., 138 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003012908	A2	20030213	WO 2002-US23880	20020726
WO 2003012908	C1	20040219		
WO 2003012908	C2	20040325		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
US 2003082446	A1	20030501	US 2001-21740	20011022
PRIORITY APPLN. INFO.:			US 2001-308360P	P 20010727
			US 2001-21740	A 20011022
			US 2000-242124P	P 20001020

AB An energy storage device includes a first electrode comprising a first material and a second electrode comprising a second material, at least a portion of the first and second materials forming an interpenetrating network when dispersed in an electrolyte, the electrolyte, the first material and the second material are selected so that the first and second materials exert a repelling force on each other when combined. An electrochem. device, includes a first electrode in elec. communication with a first current collector; a

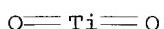
second electrode in elec. communication with a second current collector; and an ionically conductive medium in ionic contact with the first and second electrodes, wherein at least a portion of the first and second electrodes form an interpenetrating network and wherein at least one of the first and second electrodes comprises an electrode structure providing two or more pathways to its current collector.

IT 13463-67-7, Titanium oxide, uses 25014-41-9,
Polyacrylonitrile

RL: DEV (Device component use); USES (Uses)
(**battery** structures, self-organizing structures, and related methods)

RN 13463-67-7 CAPLUS

CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N

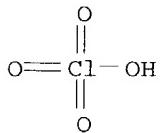


IT 7791-03-9, Lithium perchlorate

RL: MOA (Modifier or additive use); USES (Uses)
(**electrolyte**, cog. polyethylene oxide; **battery**
structures, self-organizing structures, and related methods)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-04

ICS H01M010-40; H01M004-04; H01M004-02; H01B009-00; G02F001-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72

ST **battery** structure self organizing structure
IT Phosphazenes
 RL: DEV (Device component use); USES (Uses)
 ((methoxyethoxy)ethoxy; **battery** structures, self-organizing
 structures, and related methods)
IT **Battery** anodes.
 Battery cathodes
 Conducting **polymers**
 Embossing
 Encapsulants
 Ink-jet printing
 Lithography
 Polymer electrolytes
 Primary **batteries**
 Screen printing
 (**battery** structures, self-organizing structures, and related
 methods)
IT Fluoropolymers, uses
 Polyamines
 Polyimides, uses
 Polyoxyalkylenes, uses
 RL: DEV (Device component use); USES (Uses)
 (**battery** structures, self-organizing structures, and related
 methods)
IT Polyesters, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**battery** structures, self-organizing structures, and related
 methods)
IT Polyesters, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**battery** structures, self-organizing structures, and related
 methods)
IT Glass, uses
 RL: DEV (Device component use); USES (Uses)
 (bismuth lithium borate; **battery** structures,
 self-organizing structures, and related methods)
IT **Polymers**, uses
 RL: DEV (Device component use); USES (Uses)
 (block, lithium salt-doped, **electrolyte**;
 battery structures, self-organizing structures, and related
 methods)
IT Electric apparatus
 (electrochem.; **battery** structures, self-organizing
 structures, and related methods)
IT Polyoxyalkylenes, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (lithium complexes, perchlorate- or triflate-containing;
 battery structures, self-organizing structures, and related
 methods)
IT Secondary **batteries**
 (lithium; **battery** structures, self-organizing
 structures, and related methods)

IT Composites
(nanocomposite; **battery** structures, self-organizing structures, and related methods)

IT Printing (nonimpact)
(stenciling; **battery** structures, self-organizing structures, and related methods)

IT Molding
(tape-casting; **battery** structures, self-organizing structures, and related methods)

IT Coating process
(web; **battery** structures, self-organizing structures, and related methods)

IT 7439-95-4, Magnesium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(CoLiO₂ doped with; **battery** structures, self-organizing structures, and related methods)

IT 7440-03-1, Niobium, uses 7440-25-7, Tantalum, uses 7440-32-6,
Titanium, uses 7440-33-7, Tungsten, uses
RL: MOA (Modifier or additive use); USES (Uses)
(FeLiPO₄ doped with; **battery** structures, self-organizing structures, and related methods)

IT 7429-90-5, Aluminum, uses
RL: MOA (Modifier or additive use); USES (Uses)
(LiMnO₂ doped with; **battery** structures, self-organizing structures, and related methods)

IT 68-12-2, n,n-Dimethylformamide, uses 75-11-6, Diiodomethane 96-49-1,
Ethylene carbonate 105-58-8, DiEthyl carbonate 108-32-7, Propylene carbonate 616-38-6, DimEthyl carbonate 627-31-6, 1,3-Diiodopropane 1307-96-6, Cobalt oxide coo, uses 1313-13-9, Manganese oxide mno₂, uses 1313-99-1, Nickel oxide nio, uses 1314-23-4, Zirconium oxide, uses 1314-62-1, Vanadia, uses 1317-34-6, Manganese oxide mn₂O₃ 1317-35-7, Manganese oxide mn₃O₄ 1335-25-7, Lead oxide 1344-43-0, Manganese oxidemno, uses 1345-25-1, Iron oxide feo, uses 7226-23-5 7439-93-2, **Lithium**, uses 7439-93-2D, **Lithium**, intercalation compound 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-36-0, Antimony, uses 7440-42-8, Boron, uses 7440-44-0, Carbon, uses 7440-56-4, Germanium, uses 7440-66-6, Zinc, uses 7440-69-9, Bismuth, uses 7782-42-5, Graphite, uses 9002-84-0, Ptfe 9003-53-6, Polystyrene 10361-43-0, Bismuth hydroxide 12002-78-7 12031-65-1, **Lithium** nickel oxide linio₂ 12037-30-8, Vanadium oxide v6o11 12042-37-4, Alli 12048-27-0, Bili 12057-17-9, **Lithium** manganese oxide limn₂O₄ 12057-22-6, Lizn 12057-30-6 12057-33-9 12063-07-9, Iron **lithium** oxide fe₂lio₄ 12162-79-7, **Lithium** manganese oxide limno₂ 12190-79-3, Cobalt **lithium** oxide colio₂ 12253-44-0 12338-02-2 12651-23-9, Titanium hydroxide 13463-67-7, Titanium oxide, uses 14475-63-9, Zirconium hydroxide 15365-14-7, Iron **lithium** phosphate felipo₄ 18282-10-5, Tin dioxide 21324-40-3, **Lithium** hexafluorophosphate 21651-19-4, Tin oxide sno 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25322-68-3, Peo 25322-69-4, Polypropylene oxide 37217-08-6, **Lithium** titanium oxide litio₂O₄ 39345-91-0, Lead hydroxide

50851-57-5 53262-48-9 53640-36-1 55575-96-7, **Lithium**
silicide Li₁₃Si₄ 55608-41-8 56627-44-2 61812-08-6, **Lithium**
silicide Li₂₁Si₈ 66403-10-9, **Lithium** boride (Li₅B₄)
67070-82-0 71012-86-7, **Lithium** boride (Li₇B₆) 74083-26-4
76036-33-4, **Lithium** silicide Li₁₂Si₇ 106494-93-3,
Lithium silicide Li₂₁Si₅ 126213-51-2, Poly(3,4-
ethylenedioxythiophene) 136511-06-3, MEEP 144419-56-7, Cobalt
lithium magnesium oxide Co_{0.95}LiMg_{0.05}O₂ 496816-56-9
496816-57-0, Cobalt **lithium** magnesium oxide
(Co_{0.95}Li_{0.95}Mg_{0.05}O_{1.9}) 496816-58-1, Iron **lithium** zirconium
phosphate (Fe_{0.98}LiZr_{0.02}(PO₄))
RL: DEV (Device component use); USES (Uses)
(**battery** structures, self-organizing structures, and related
methods)

IT 76-05-1, Trifluoroacetic acid, uses 104-15-4, Toluene sulfonic acid,
uses 7647-01-0, Hydrochloric acid, uses 57534-41-5, Zonyl FSN
RL: MOA (Modifier or additive use); USES (Uses)
(**battery** structures, self-organizing structures, and related
methods)

IT 9002-88-4, Polyethylene 11099-11-9, Vanadium oxide 25038-59-9, Mylar,
uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**battery** structures, self-organizing structures, and related
methods)

IT 99742-70-8, Poly(o-methoxyaniline) 104934-51-2, Poly(3-octylthiophene)
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; **battery** structures, self-organizing structures, and
related methods)

IT 7440-50-8, Copper, uses
RL: DEV (Device component use); USES (Uses)
(current collector; **battery** structures, self-organizing
structures, and related methods)

IT 7791-03-9, **Lithium** perchlorate 33454-82-9,
Lithium triflate
RL: MOA (Modifier or additive use); USES (Uses)
(electrolyte, cog. polyethylene oxide; **battery**
structures, self-organizing structures, and related methods)

IT 1303-86-2, Boron oxide b₂O₃, uses 1304-76-3, Bismuth oxide b₂O₃, uses
1314-56-3, Phosphorus pentoxide, uses 1317-36-8, Lead oxide pbo, uses
7447-41-8, **Lithium** chloride, uses 7631-86-9, Silica, uses
7789-24-4, **Lithium** fluoride, uses 10377-51-2, **Lithium**
iodide 12057-24-8, Lithia, uses
RL: DEV (Device component use); USES (Uses)
(glass; **battery** structures, self-organizing structures, and
related methods)

IT 7439-93-2D, **Lithium**, polyethylene oxide complexes 25322-68-3D,
Peo, **lithium** complexes
RL: MOA (Modifier or additive use); USES (Uses)
(perchlorate- or triflate-containing; **battery** structures,
self-organizing structures, and related methods)

ACCESSION NUMBER: 2002:946737 CAPLUS
 DOCUMENT NUMBER: 138:14325
 TITLE: Solid composite polymer
 electrolyte for secondary battery
 INVENTOR(S): Chen-Yang, Yui-Whei; Chen, Hung-Chang; Lin, Fu-Luo
 PATENT ASSIGNEE(S): Chung Yuan Christian University, Taiwan
 SOURCE: U.S. Pat. Appl. Publ., 5 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002185627	A1	20021212	US 2001-865478	20010529
PRIORITY APPN. INFO.:			US 2001-865478	20010529

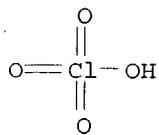
AB A solid composite polymer electrolyte
 contains (I) a general amorphous branched polymer having recurrent units, each of which includes a backbone chain and at least a side chain linked to the backbone chain and containing at least one coordination potential atom, (II) an amphoteric metal salt dispersed in the branched polymer and forming Lewis acid-base interactions with the side chains, and (III) an amphoteric Lewis acid-base ceramic filler dispersed in the branched polymer and forming Lewis acid-base interactions with the side chains and the metal salt. Thus, a polymer electrolyte was prepared by mixing poly[bis(methoxyethoxyethoxy)phosphazene] (prepared by reacting poly(dichlorophosphazene) with 2-(2-methoxyethoxyethanol) in the presence of sodium hydride in THF) with lithium perchlorate and α -aluminum oxide.

IT 1344-28-1, α -Aluminum oxide, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (Lewis acid-base ceramic filler; preparation of solid composite polymer electrolyte for secondary battery)
RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7791-03-9, Lithium perchlorate
 RL: MOA (Modifier or additive use); USES (Uses)
 (amphoteric metal salt; preparation of solid composite polymer electrolyte for secondary battery)
RN 7791-03-9 CAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

Applies



● Li

IT 25014-41-9, PAN
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(preparation of solid composite polymer electrolyte for secondary battery)
RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)
CM 1
CRN 107-13-1
CMF C3 H3 N



IC ICM H01G002-00
ICS H01M006-18
NCL 252062200; 429306000; 429323000
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 76
ST solid composite polymer electrolyte
secondary battery
IT Ceramics
(Lewis acid-base filler; preparation of solid composite polymer electrolyte for secondary battery)
IT Polymer electrolytes
(preparation of solid composite polymer electrolyte for secondary battery)
IT Polyphosphazenes
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of solid composite polymer electrolyte for secondary battery)
IT 1344-28-1, α -Aluminum oxide, uses
RL: MOA (Modifier or additive use); USES (Uses)
(Lewis acid-base ceramic filler; preparation of solid composite polymer electrolyte for secondary battery)
IT 7791-03-9, Lithium perchlorate

RL: MOA (Modifier or additive use); USES (Uses)
(amphoteric metal salt; preparation of solid composite
polymer electrolyte for secondary battery)

IT 111-77-3DP, 2-(2-Methoxyethoxyethanol), reaction products with
poly(dichlorophosphazene) 26085-02-9DP, Poly(dichlorophosphazene),
reaction products with 2-(2-methoxyethoxyethanol)

RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP
(Properties); TEM (Technical or engineered material use); PREP
(Preparation); USES (Uses)
(preparation of solid **composite polymer**
electrolyte for secondary battery)

IT 25014-41-9, PAN
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or
engineered material use); USES (Uses)
(preparation of solid **composite polymer**
electrolyte for secondary battery)

L23 ANSWER 9 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

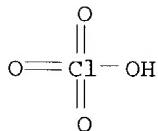
ACCESSION NUMBER: 2002:696297 CAPLUS
DOCUMENT NUMBER: 137:204015
TITLE: **Electrochemical device using multicomponent composite membrane film**
INVENTOR(S): Lee, Seung-Jin; Lee, Hyang-Mok; Ahn, Soon-Ho; Cho,
Jin-Yeon; Yong, Hyun-Hang; Lee, Hyung-Keun; Lee,
Sang-Young; Song, Heon-Sik; Ahn, Byeong-In; Park,
Soon-Yong; Kyung, You-jin
PATENT ASSIGNEE(S): LG Chem, Ltd., S. Korea; et al.
SOURCE: PCT Int. Appl., 56 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002071509	A1	20020912	WO 2002-KR377	20020305
W: CN, JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
EP 1285468	A1	20030226	EP 2002-705524	20020305
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
US 2003104273	A1	20030605	US 2002-258170	20021022
PRIORITY APPLN. INFO.:			KR 2001-11192	A 20010305
			WO 2002-KR377	W 20020305

AB The present invention provides an **electrochem.** element, wherein
a multi-component **composite** film comprising (a) **polymer**
support layer film and (b) a porous gellable **polymer** layer which
is formed on either or both sides of the support layer film of (a),
wherein the support layer film of (a) and the gellable **polymer**
layer of (b) are unified with each other without an interface between

them.

IT 7791-03-9, Lithium perchlorate 25014-41-9,
Polyacrylonitrile
RL: DEV (Device component use); USES (Uses)
(electrochem. device using multicomponent composite
membrane film)
RN 7791-03-9 CAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

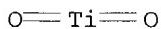
CRN 107-13-1
CMF C3 H3 N



IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(electrochem. device using multicomponent composite
membrane film)
RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 CAPLUS
CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M002-14
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST battery multicomponent composite membrane film
IT Polyesters, uses

RL: DEV (Device component use); USES (Uses)
(acrylates; **electrochem.** device using multicomponent
composite membrane film)

IT Secondary batteries
Secondary battery separators
(**electrochem.** device using multicomponent **composite**
membrane film)

IT Fluoropolymers, uses
Polyamides, uses
Polycarbonates, uses
Polyesters, uses
Polyoxyalkylenes, uses
Polyoxyphenylenes
Polysiloxanes, uses
Polysulfones, uses
Polyurethanes, uses
RL: DEV (Device component use); USES (Uses)
(**electrochem.** device using multicomponent **composite**
membrane film)

IT Polyolefins
RL: DEV (Device component use); USES (Uses)
(ionomers; **electrochem.** device using multicomponent
composite membrane film)

IT Ionomers
RL: DEV (Device component use); USES (Uses)
(polyolefins; **electrochem.** device using multicomponent
composite membrane film)

IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(porous gellable; **electrochem.** device using multicomponent
composite membrane film)

IT 556-65-0, **Lithium** thiocyanate 7791-03-9,
Lithium perchlorate 9002-85-1, Polyvinylidene chloride
9002-88-4, Polyethylene 9003-01-4, Polyacrylic acid 9003-05-8,
Polyacrylamide 9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate
9003-39-8, Polyvinylpyrrolidone 9003-53-6, Polystyrene 9010-75-7,
Chlorotrifluoroethylene-vinylidene fluoride copolymer 9010-79-1,
Ethylene-propylene copolymer 9011-14-7, Pmma 9011-17-0,
Hexafluoropropylene-vinylidene fluoride copolymer 9016-80-2, Polymethyl
pentene 9019-29-8, Ethylene-butylene copolymer 9041-80-9,
Polyphenylene oxide 14283-07-9, **Lithium** tetrafluoroborate
24937-79-9, Polyvinylidene fluoride 25014-41-9,
Polyacrylonitrile 25190-06-1, Polybutylene oxide 25322-68-3, Peo
25322-69-4, Polypropylene oxide 25568-84-7D, Polycyclopentadiene,
hydrogenated 29935-35-1, **Lithium** hexafluoroarsenate
33454-82-9, **Lithium** triflate 39410-01-0, Butylene-styrene
copolymer 57271-36-0, Butylene-ethylene-styrene copolymer 57619-91-7,
Polytetraethylene glycol diacrylate 70800-37-2, Ethylene-octene
copolymer 88117-78-6, Ethylene-hexene copolymer 90076-65-6
RL: DEV (Device component use); USES (Uses)
(**electrochem.** device using multicomponent **composite**
membrane film)

IT 1303-86-2, Boron oxide b₂O₃, uses 1309-48-4, Magnesia, uses
1344-28-1, Alumina, uses 7631-86-9, Silica, uses
13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(electrochem. device using multicomponent composite
membrane film)

IT 60-29-7, Diethyl ether, uses 64-17-5, Ethanol, uses 64-19-7, Acetic
acid, uses 67-64-1, Acetone, uses 67-68-5, DMSO, uses 68-12-2, DMF,
uses 71-23-8, n-Propanol, uses 71-36-3, n-Butanol, uses 71-43-2,
Benzene, uses 108-88-3, Toluene, uses 108-93-0, Cyclohexanol, uses
109-99-9, THF, uses 110-54-3, n-Hexane, uses 110-82-7, Cyclohexane,
uses 123-91-1, Dioxane, uses 127-19-5, Dimethyl acetamide 141-78-6,
Ethyl acetate, uses 872-50-4, 1-Methyl-2-pyrrolidone, uses 1330-20-7,
Xylene, uses 7732-18-5, Water, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(electrochem. device using multicomponent composite
membrane film)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

JK
D

L23 ANSWER 10 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:668076 CAPLUS
DOCUMENT NUMBER: 138:41901
TITLE: Polyacrylonitrile electrolytes 1. A novel
high-conductivity composite polymer
electrolyte based on PAN, LiClO₄ and
 α -Al₂O₃
AUTHOR(S): Chen-Yang, Y. W.; Chen, H. C.; Lin, F. J.; Chen, C. C.
CORPORATE SOURCE: Department of Chemistry and Center for Nanotechnology
at CYCU, Chung Yuan Christian University, Taichung,
32023, Taiwan
SOURCE: Solid State Ionics (2002), 150(3,4), 327-335
CODEN: SSIOD3; ISSN: 0167-2738

PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB In this work, a series of novel solid-type α -Al₂O₃-containing
polyacrylonitrile (PAN)-based composite polymer
electrolytes (CPE) with high conductivity and high mech. property at room
temperature has been prepared. The effect of the addition of α -Al₂O₃ on the
properties of the PAN-based composite polymer
electrolyte has been analyzed. The best conductivities obtained
at room temperature is 5.7+10⁻⁴ S cm⁻¹ from the CPE with 7.5 weight%
 α -Al₂O₃ and 0.6 LiClO₄ per PAN repeat unit. The stress-strain test
result indicates that the membranes prepared possess high yield stress (73
kg cm⁻²) suitable for serving as separators in the solid-state
lithium and lithium ion batteries and high
yield elongation (225%) pliable to form good interface with electrodes.
Also discussed are the effects of the addition of the ceramics on the
interactions in the system and the possible conduction mechanism.

IT 1344-28-1, Alumina, processes 7791-03-9, Lithium
perchlorate 25014-41-9, Polyacrylonitrile

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)

(high-conductivity composite polymer electrolyte
based on polyacrylonitrile, LiClO₄ and α -Al₂O₃)

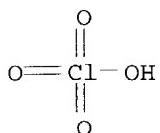
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery electrolyte alumina polyacrylonitrile
lithium perchlorate

IT Battery electrolytes
Fuel cell separators

(high-conductivity composite polymer electrolyte
based on polyacrylonitrile, LiClO₄ and α -Al₂O₃)

IT 1344-28-1, Alumina, processes 7791-03-9, Lithium
perchlorate 25014-41-9, Polyacrylonitrile

RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); PROC (Process)

(high-conductivity composite polymer electrolyte
based on polyacrylonitrile, LiClO₄ and α -Al₂O₃)

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 11 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

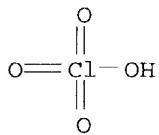
ACCESSION NUMBER: 2002:595200 CAPLUS

DOCUMENT NUMBER: 137:143066
TITLE: A multi-layered, UV-cured **polymer electrolyte** for lithium secondary **battery**
INVENTOR(S): Yun, Kyung-Suk; Cho, Byung-Won; Cho, Won-Il; Kim, Hyung-Sun; Kim, Un-Sek; Rhee, Hee-Woo; Kim, Yong-Tae
PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea
SOURCE: PCT Int. Appl., 40 pp.
CODEN: PIXXD2 
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002061874	A1	20020808	WO 2001-KR133	20010131
W: JP, KR, US				
US 2003180623	A1	20030925	US 2003-275383	20030522
PRIORITY APPLN. INFO.:			WO 2001-KR133	W 20010131

AB The present invention relates to a multi-layered, UV-cured **polymer electrolyte** and lithium secondary **battery** comprising the same, wherein the **polymer electrolyte** comprises: (A) a separator layer formed of **polymer electrolyte**, PP, PE, PVdF or non-woven fabric, wherein the separator layer having two surfaces; (B) at least one gelled **polymer electrolyte** layer located on at least one surface of the separator layer comprising: (a) **polymer** obtained by curing ethyleneglycoldi(meth)acrylate oligomer of the formula by UV irradiation: $\text{CH}_2=\text{CR}_1\text{COO}(\text{CH}_2\text{CH}_2\text{O})_n\text{COCR}_2=\text{CH}_2$ wherein, R1 and R2 are independently hydrogen or Me group, and n is a integer of 3-20; and (b) at least one **polymer** selected from the group consisting of PVdF-based **polymer**, PAN-based **polymer**, PMMA-based **polymer** and PVC-based **polymer**; and (C) organic **electrolyte** solution in which lithium salt is dissolved in a solvent.

IT 7791-03-9, Lithium perchlorate 9003-00-3,
Acrylonitrile-vinyl chloride copolymer 24968-79-4,
Acrylonitrile-methylacrylate copolymer 25014-41-9,
Polyacrylonitrile
RL: DEV (Device component use); USES (Uses)
(multilayered, UV-cured **polymer electrolyte** for lithium secondary **battery**)
RN 7791-03-9 CAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 9003-00-3 CAPLUS

CN 2-Propenenitrile, polymer with chloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

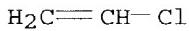
CMF C3 H3 N



CM 2

CRN 75-01-4

CMF C2 H3 Cl



RN 24968-79-4 CAPLUS

CN 2-Propenoic acid, methyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

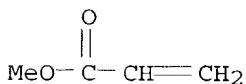
CMF C3 H3 N



CM 2

CRN 96-33-3

CMF C4 H6 O2



RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

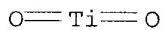
CRN 107-13-1
CMF C3 H3 N



IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(porous filler; multilayered, UV-cured polymer
electrolyte for lithium secondary battery)
RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 CAPLUS
CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium secondary battery UV cured polymer
electrolyte
IT Secondary batteries
(lithium; multilayered, UV-cured polymer
electrolyte for lithium secondary battery)
IT Battery electrolytes
Polymer electrolytes
(multilayered, UV-cured polymer electrolyte for
lithium secondary battery)
IT Coke
Fluoropolymers, uses
Polymer blends
RL: DEV (Device component use); USES (Uses)
(multilayered, UV-cured polymer electrolyte for
lithium secondary battery)
IT Crosslinking

(photochem.; multilayered, UV-cured **polymer electrolyte** for lithium secondary battery)

IT Fluoropolymers, uses
Polymer, uses
RL: MOA (Modifier or additive use); USES (Uses)
(porous filler; multilayered, UV-cured **polymer electrolyte** for lithium secondary battery)

IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(multilayered, UV-cured **polymer electrolyte** for lithium secondary battery)

IT 102-71-6, Triethanolamine, uses 102-82-9, Tributylamine 103-83-3,
n-Benzylidimethylamine 121-44-8, Triethylamine, uses
RL: MOA (Modifier or additive use); USES (Uses)
(UV curing accelerator; multilayered, UV-cured **polymer electrolyte** for lithium secondary battery)

IT 84-51-5, 2-EthylAnthraquinone 84-65-1, Anthraquinone 93-97-0, Benzoyl benzoate 119-61-9, Benzophenone, uses 120-51-4, Benzyl benzoate 131-09-9, 2-ChloroAnthraquinone 492-22-8, Thioxanthone 574-09-4, Ethyl benzoin ether 947-19-3, 1-Hydroxycyclohexyl phenyl ketone 2648-61-5 3524-62-7 5293-97-0, 2,2'-Dichlorobenzophenone 6175-45-7, 2,2-Diethoxyacetophenone 6652-28-4, Isopropyl benzoin ether 6652-29-5, Benzoin phenyl ether 7473-98-5, 2-Hydroxy-2-methyl-1-phenylpropane-1-one 7624-24-0 7727-54-0, Ammonium persulfate 24650-42-8, 2,2-Dimethoxy-2-phenylacetophenone 72896-34-5, Chlorothioxanthone 75081-21-9, Isopropyl thioxanthone
RL: MOA (Modifier or additive use); USES (Uses)
(UV curing initiator; multilayered, UV-cured **polymer electrolyte** for lithium secondary battery)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(hard; multilayered, UV-cured **polymer electrolyte** for lithium secondary battery)

IT 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-37-3, Ethyl propionate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 127-19-5, Dimethyl acetamide 141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 1314-62-1, Vanadium pentoxide, uses 1332-29-2, Tin oxide 4437-85-8, Butylene carbonate 7439-93-2, **Lithium**, uses 7782-42-5, Graphite, uses 7791-03-9, **Lithium** perchlorate 9002-86-2, Polyvinyl chloride 9002-88-4, Polyethylene 9003-00-3, Acrylonitrile-vinyl chloride copolymer 9003-07-0, Polypropylene 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 9011-14-7, Pmma 9011-17-0, Kynar 2801 9056-77-3, Poly(ethylene glycol methacrylate) 12031-65-1, **Lithium** nickel oxide linio2 12037-42-2, Vanadium oxide v6o13 12190-79-3, Cobalt **lithium** oxide colio2 14283-07-9, **Lithium** tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate 24937-79-9, Pvdf 24968-79-4, Acrylonitrile-methylacrylate copolymer 25014-41-9, Polyacrylonitrile 25086-15-1, Methacrylic

acid-methyl methacrylate copolymer 29935-35-1, **Lithium hexafluoroarsenate** 33454-82-9, **Lithium triflate** 90076-65-6
162004-08-2, Cobalt **lithium** nickel oxide colinio2
RL: DEV (Device component use); USES (Uses)
(multilayered, UV-cured **polymer electrolyte** for
lithium secondary battery)

IT 554-13-2 1304-28-5, Baria, uses 1309-48-4, Magnesia, uses 1310-65-2,
Lithium hydroxide (Li(OH)) 1313-59-3, Sodium oxide, uses
1344-28-1, Alumina, uses 7631-86-9, Silica, uses 7789-24-4,
Lithium fluoride, uses 9002-84-0, Ptfe 12003-67-7, Aluminum
lithium oxide allio2 12047-27-7, Barium titanium oxide batio3,
uses 12057-24-8, **Lithia**, uses 13463-67-7, Titania, uses
26134-62-3, **Lithium nitride** (Li₃N)
RL: MOA (Modifier or additive use); USES (Uses)
(porous filler; multilayered, UV-cured **polymer electrolyte** for **lithium secondary battery**)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 12 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:595199 CAPLUS
DOCUMENT NUMBER: 137:143065
TITLE: Fabrication of **lithium secondary battery** with a UV-cured multi-component **polymer blend electrolyte**
INVENTOR(S): Cho, Byung-Won; Cho, Won-Il; Kim, Hyung-Sun; Kim, Un-Sek; Rhee, Hee-Woo; Kim, Yong-Tae; Song, Min-Kyu
PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea
SOURCE: PCT Int. Appl., 35 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002061873	A1	20020808	WO 2001-KR130	20010131

W: JP, KR, US

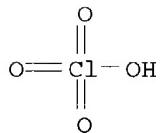
PRIORITY APPLN. INFO.: WO 2001-KR130 20010131

AB The present invention relates to a UV-cured multi-component **polymer blend electrolyte**, **lithium secondary battery** and their fabrication method, wherein the UV-cured multi-component **polymer blend electrolyte**, comprises:
(A) function-I **polymer** obtained by curing ethylene glycol dimethacrylate oligomer of formula by UV irradiation,
 $\text{CH}_2=\text{CR}_1\text{COO}(\text{CH}_2\text{CH}_2\text{O})_n\text{COCR}_2=\text{CH}_2$ wherein, R₁ and R₂ are independently a hydrogen or Me group, and n is an integer of 3-20; (B) function-II **polymer** selected from the group consisting of PAN-based **polymer**, PMMA-based **polymer** and mixts. thereof; (C) function-III **polymer** selected from the group consisting of PVdF-based **polymer**, PVC-based **polymer** and mixts.

Par

thereof; and (D) organic **electrolyte** solution in which lithium salt is dissolved in a solvent.

IT 7791-03-9, Lithium perchlorate 9003-00-3,
Acrylonitrile-vinyl chloride copolymer 24968-79-4,
Acrylonitrile-methylacrylate copolymer 25014-41-9,
Polyacrylonitrile
RL: DEV (Device component use); USES (Uses)
(fabrication of lithium secondary **battery** with
UV-cured multi-component **polymer** blend **electrolyte**)
RN 7791-03-9 CAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 9003-00-3 CAPLUS
CN 2-Propenenitrile, polymer with chloroethene (9CI) (CA INDEX NAME)

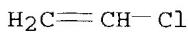
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 75-01-4
CMF C2 H3 Cl



RN 24968-79-4 CAPLUS
CN 2-Propenoic acid, methyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N



CM 2

CRN 96-33-3
CMF C4 H6 O2



RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N

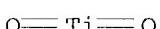


IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(porous filler; fabrication of lithium secondary
battery with UV-cured multi-component polymer blend
electrolyte)

RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 CAPLUS
CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium secondary battery fabrication UV cured
polymer blend electrolyte
IT Battery electrolytes

Polymer electrolytes
(fabrication of lithium secondary battery with
UV-cured multi-component polymer blend electrolyte)

IT Coke
Polymer blends
RL: DEV (Device component use); USES (Uses)
(fabrication of lithium secondary battery with
UV-cured multi-component polymer blend electrolyte)

IT **Polymers, uses**
RL: MOA (Modifier or additive use); USES (Uses)
(fillers; fabrication of lithium secondary battery
with UV-cured multi-component polymer blend
electrolyte)

IT Secondary batteries
(lithium; fabrication of lithium secondary
battery with UV-cured multi-component polymer blend
electrolyte)

IT Crosslinking
(photochem.; fabrication of lithium secondary battery
with UV-cured multi-component polymer blend
electrolyte)

IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(porous filler; fabrication of lithium secondary
battery with UV-cured multi-component polymer blend
electrolyte)

IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(fabrication of lithium secondary battery with
UV-cured multi-component polymer blend electrolyte)

IT 84-51-5, 2-EthylAnthraquinone 84-65-1, Anthraquinone 93-97-0, Benzoyl
benzoate 119-61-9, Benzophenone, uses 120-51-4, Benzyl benzoate
131-09-9, 2-Chloroanthraquinone 492-22-8, Thioxanthone 574-09-4, Ethyl
benzoin ether 947-19-3, 1-Hydroxycyclohexyl phenyl ketone 2648-61-5
5293-97-0, 2,2'-Dichlorobenzophenone 6175-45-7, 2,2-Diethoxyacetophenone
6652-29-5, Benzoin phenyl ether 7473-98-5, 2-Hydroxy-2-methyl-1-
phenylpropane-1-one 7624-24-0 7727-54-0, Ammonium persulfate
24650-42-8, 2,2-Dimethoxy-2-phenylacetophenone 72896-34-5,
Chlorothioxanthone 75081-21-9, Isopropyl thioxanthone
RL: MOA (Modifier or additive use); USES (Uses)
(UV curing initiator; fabrication of lithium secondary
battery with UV-cured multi-component polymer blend
electrolyte)

IT 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate
96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-37-3,
Ethyl propionate 105-58-8, Diethyl carbonate 108-32-7, Propylene
carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane
127-19-5, Dimethyl acetamide 141-78-6, Ethyl acetate, uses 554-12-1,
Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl
carbonate 1314-62-1, Vanadia, uses 1332-29-2, Tin oxide 4437-85-8,
Butylene carbonate 7439-93-2, Lithium, uses 7782-42-5,
Graphite, uses 7791-03-9, Lithium perchlorate

9002-86-2, Polyvinyl chloride 9003-00-3, Acrylonitrile-vinyl chloride copolymer 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 9011-14-7, Pmma 9011-17-0, Kynar 2801 12031-65-1, Lithium nickel oxide linio₂ 12037-42-2, Vanadium oxidev6o13 12057-17-9, Lithium manganese oxide limn₂o₄ 12190-79-3, Cobalt lithium oxide colio₂ 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24968-79-4, Acrylonitrile-methylacrylate copolymer 25014-41-9, Polyacrylonitrile 25086-15-1, Methacrylic acid-methyl methacrylate copolymer 26570-48-9, Polyethylene glycol diacrylate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 162004-08-2, Cobalt lithium nickel oxide colinio₂

RL: DEV (Device component use); USES (Uses)
(fabrication of lithium secondary battery with
UV-cured multi-component polymer blend electrolyte)

IT 7440-44-0, Carbon, uses

RL: DEV (Device component use); USES (Uses)
(hard; fabrication of lithium secondary battery
with UV-cured multi-component polymer blend
electrolyte)

IT 554-13-2 1304-28-5, Barium oxide (BaO), uses 1309-48-4, Magnesium oxide (MgO), uses 1310-65-2, Lithium hydroxide (Li(OH)) 1313-59-3, Sodium oxide (Na₂O), uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 7789-24-4, Lithium fluoride, uses 9002-84-0, Ptfe 12003-67-7, Aluminum lithium oxide allio₂ 12047-27-7, Barium titanium oxide batio₃, uses 12057-24-8, Lithia, uses 13463-67-7, Titania, uses 26134-62-3, Lithium nitride (Li₃N)

RL: MOA (Modifier or additive use); USES (Uses)
(porous filler; fabrication of lithium secondary
battery with UV-cured multi-component polymer blend
electrolyte)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 13 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:585696 CAPLUS
DOCUMENT NUMBER: 137:111647
TITLE: Secondary Li ion battery using colloidal polymer as electrolyte and its preparing process
INVENTOR(S): Gu, Hui; Huang, Xuejie; Chen, Liquan
PATENT ASSIGNEE(S): Inst. of Physics, Chinese Academy of Sciences, Peop. Rep. China
SOURCE: Faming Zhuanli Shengqing Gongkai Shuomingshu, 33 pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

✓

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1315752	A	<u>20011003</u>	CN 2000-105541	20000330
PRIORITY APPLN. INFO.:			CN 2000-105541	20000330

AB The **battery** consists of an anode with a carbonaceous material as active material, a cathode with LiCoO₂, LiNiO₂, or LiMn₂O₄ as active material, colloidal **polymer electrolyte**, **polymer separator**, etc. The colloidal **polymer electrolyte** is prepared from: (1) monomers such as Me methacrylate, Bu methacrylate, isoctyl methacrylate, allyl methacrylate, Me acrylate, Et acrylate, Bu acrylate, polyethylene glycol alkyl ether monoacrylate, polyethylene glycol diacrylate, polyethylene glycol alkyl ether monomethacrylate, or polyethylene glycol dimethacrylate, (2) solvent for the **electrolyte** such as ethylene carbonate, propylene carbonate, di-Me carbonate, di-Et carbonate, ethylmethyl carbonate, or dimethoxyethane, (3) soluble Li salt such as LiN(CF₃SO₂)₃, LiClO₄, LiBF₄, LiPF₆, LiCF₃SO₃, LiNH(CF₃SO₂)₂, or LiAsF₆, (4) initiators such as AIBN, 2,2'-azobis(isoheptyronitrile), 2-tert-Bu oxide, dicumyl peroxide, benzoyl superoxide, dilauroyl peroxide, isopropylbenzene hydroperoxide, diisopropyl pyrocarbonate, dicyclohexyl pyrocarbonate, cyclohexane carboxylate, organometallic compds., triethylboron, combination of benzoyl superoxide and N,N-di-Me aniline, benzoin iso-Bu ether, benzoin iso-Pr ether, benzoin Me ether, benzoin Et ether, benzophenone, acetophenone, diethoxyacetophenone, etc., (5) nanometer SiO₂ or Al₂O₃, amorphous film separator of **polymers** such as polypropylene, polyethylene, poly(vinylidene fluoride), PAN, or fiber- or powder- reinforced polyethylene glycol.

IT 1344-28-1, Alumina, uses 7791-03-9, Lithium perchlorate 25014-41-9, PAN (**polymer**)

RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(secondary Li ion **battery** using colloidal **polymer** as **electrolyte** and preparing process)

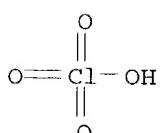
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N



IC ICM H01M010-40

ICS H01M010-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium ion **battery** colloidal **polymer**
electrolyte

IT Polyoxalkylenes, uses

RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)

(alkyl ether mono(meth)acrylate; secondary Li ion **battery** using colloidal **polymer** as **electrolyte** and preparing process)

IT Secondary **batteries**

(lithium; secondary Li ion **battery** using colloidal **polymer** as **electrolyte** and preparing process)

IT **Battery** anodes

Battery cathodes

Colloids

Polymer electrolytes

Secondary **battery** separators

(secondary Li ion **battery** using colloidal **polymer** as **electrolyte** and preparing process)

IT Carbonaceous materials (technological products)

Fluoropolymers, uses

Polyoxalkylenes, uses

RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(secondary Li ion **battery** using colloidal **polymer** as **electrolyte** and preparing process)

IT 78-67-1, AIBN 80-15-9, Isopropylbenzene hydroperoxide 80-43-3, Dicumyl peroxide 94-36-0, Benzoyl superoxide, uses 96-49-1, Ethylene carbonate 97-94-9, Triethylboron 98-86-2, Acetophenone, uses 105-58-8, Diethyl carbonate 105-74-8, Dilauroyl peroxide 108-32-7, Propylene carbonate 110-05-4, Bis(tert-Butyl) peroxide 110-71-4 119-61-9, Benzophenone, uses 121-69-7, N,N-Dimethyl aniline, uses 574-09-4, Benzoin ethyl ether 616-38-6, Dimethyl carbonate 623-53-0, Ethylmethyl carbonate 1344-28-1, Alumina, uses 3198-23-0, Cyclohexane carboxylate 3524-62-7, Benzoin methyl ether 6175-45-7, Diethoxyacetophenone 6652-28-4, Benzoin isopropyl ether 7631-86-9, Silica, uses 7791-03-9, Lithium perchlorate 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9011-17-0, Vinylidene fluoride-

hexafluoropropene copolymer 12031-65-1, Lithium nickel oxide (LiNiO₂) 12057-17-9, Lithium manganese oxide (LiMn₂O₄) 12190-79-3, Cobalt lithium oxide (LiCoO₂) 14283-07-9, Lithium tetrafluoroborate (LiBF₄) 15545-95-6 21324-40-3, Lithium hexafluorophosphate (LiPF₆) 22499-12-3, Benzoin isobutyl ether 24425-00-1, Diisopropyl pyrocarbonate 24937-79-9, Poly(vinylidene fluoride) 25014-41-9, PAN (polymer) 25322-68-3, Poly(ethylene glycol) 29935-35-1, Lithium hexafluoroarsenate (LiAsF₆) 33454-82-9 61114-49-6, Dicyclohexyl pyrocarbonate 90076-65-6
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(secondary Li ion battery using colloidal polymer as electrolyte and preparing process)

IT 80-62-6, Methyl methacrylate 96-05-9, Allyl methacrylate 96-33-3, Methyl acrylate 97-63-2, Ethyl methacrylate 97-86-9, IsoButyl methacrylate 97-88-1, Butyl methacrylate 140-88-5, Ethyl acrylate 141-32-2, Butyl acrylate 2210-28-8, Propyl methacrylate 25322-68-3D, Polyethylene glycol, alkyl ether mono(meth)acrylate 25721-76-0, Polyethylene glycol dimethacrylate 28158-16-9, Poly(ethylene glycol diacrylate) 28675-80-1, Isooctyl methacrylate
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)

(secondary Li ion battery using colloidal polymer as electrolyte and preparing process)

L23 ANSWER 14 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:143078 CAPLUS
DOCUMENT NUMBER: 136:201311
TITLE: Multicomponent composite film and method for preparing the same
INVENTOR(S): Lee, Seung-Jin; Lee, Hyang-Mok; Ahn, Soon-Ho; Cho, Jin-Yeon; Yong, Hyun-Hang; Lee, Hyung-Keun; Lee, Sang-Young; Song, Heon-Sik; Park, Soon-Yong; Kyung, You-Jin; Ahn, Byeong-In
PATENT ASSIGNEE(S): LG Chemical Co., Ltd., S. Korea
SOURCE: PCT Int. Appl., 34 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002015299	A1	20020221	WO 2001-KR1374	20010811
W: CN, JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
EP 1310005	A1	20030514	EP 2001-958588	20010811
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				

IE, FI, CY, TR

JP 2004506542 T2 20040304
US 2002187401 A1 ~~20021212~~

JP 2002-520328 20010811
US 2002-110047 ~~20020405~~

PRIORITY APPLN. INFO.:

KR 2000-46735 A 20000812
KR 2001-11191 A 20010305
WO 2001-KR1374 W 20010811

AB The present invention provides a multi-component **composite** film comprising (a) **polymer** support layer (e.g., polypropylene); and (b) porous gelable **polymer** layer (e.g., polyvinylidene fluoride) which is formed on one side or both sides of the support layer of (a), wherein the support film of (a) and the gelable **polymer** layer of (b) are unified without the interface, a method for preparing the same, and a **polymer electrolyte** system applied the same.

IT 1344-28-1, Alumina, uses 7791-03-9, Lithium perchlorate LiClO₄ 13463-67-7, Titania, uses

RL: MOA (Modifier or additive use); USES (Uses)
(multicomponent **composite** film and method for preparing the same)

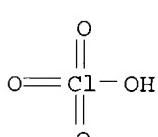
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7791-03-9 CAPLUS

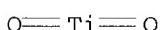
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 13463-67-7 CAPLUS

CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



IT 25014-41-9, Polyacrylonitrile

RL: TEM (Technical or engineered material use); USES (Uses)
(multicomponent **composite** film and method for preparing the same)

RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N



IC ICM H01M002-16
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52
ST multicomponent composite polymer film
electrolyte
IT Electric apparatus
(electrochem.; multicomponent composite film and
method for preparing the same)
IT Styrene-butadiene rubber, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(hydrogenated, block, triblock; multicomponent composite film
and method for preparing the same)
IT Fuel cells
Polymer electrolytes
Primary batteries
Secondary batteries
Sensors
(multicomponent composite film and method for preparing the
same)
IT Fluoropolymers, uses
Ionomers
Linear low density polyethylenes
Polyamides, uses
Polycarbonates, uses
Polyesters, uses
Polyoxyalkylenes, uses
Polyoxyphenylenes
Polysiloxanes, uses
Polysulfones, uses
Polyurethanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(multicomponent composite film and method for preparing the
same)
IT Capacitors
(ultra; multicomponent composite film and method for preparing
the same)
IT 556-65-0, Lithium thiocyanate LiSCN 1303-86-2, Boron oxide
B₂O₃, uses 1309-48-4, Magnesium oxide (MgO), uses 1344-28-1,
Alumina, uses 7631-86-9, Silica, uses 7791-03-9,
Lithium perchlorate LiClO₄ 13463-67-7, Titania, uses
14283-07-9, Lithium tetrafluoroborate LiBF₄ 29935-35-1,
Lithium hexafluoroarsenate LiAsF₆ 33454-82-9, Lithium
trifluoromethanesulfonate 90076-65-6
RL: MOA (Modifier or additive use); USES (Uses)
(multicomponent composite film and method for preparing the

same)

- IT 74-85-1D, Ethene, polymers with α -olefins 9002-85-1,
Polyvinylidene chloride 9002-88-4, Polyethylene 9003-01-4, Polyacrylic
acid 9003-05-8, Polyacrylamide 9003-07-0, Polypropylene 9003-20-7,
Polyvinyl acetate 9003-39-8, Polyvinylpyrrolidone 9003-53-6,
Polystyrene 9010-75-7, Chlorotrifluoroethylene-vinylidene fluoride
copolymer 9010-79-1, Ethylene-propylene copolymer 9011-14-7,
Polymethyl methacrylate 9011-17-0, Hexafluoropropylene-vinylidene
fluoride copolymer 9016-80-2, Polymethyl pentene 24937-79-9,
Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile
25087-34-7, Ethylene-1-butylene copolymer 25190-06-1, Polybutylene oxide
25213-02-9, Ethylene-hexene copolymer 25322-68-3, Polyethylene oxide
25322-69-4, Polypropylene oxide 26221-73-8, Ethylene-octene copolymer
57619-91-7, Polytetraethylene glycol diacrylate 120246-23-3,
Butylene-styrene block copolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(multicomponent composite film and method for preparing the
same)
- IT 25568-84-7D, Cyclopentadiene homopolymer, hydrogenated
RL: TEM (Technical or engineered material use); USES (Uses)
(oligomeric; multicomponent composite film and method for
preparing the same)
- IT 9003-55-8
RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, hydrogenated, block, triblock;
multicomponent composite film and method for preparing the same)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 15 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:935958 CAPLUS
DOCUMENT NUMBER: 136:56445
TITLE: Methods for preparation of microporous solid
electrolytes for rechargeable
batteries
INVENTOR(S): Jang, Dong Hun; Kim, Sa Heum; Kim, Han Jun
PATENT ASSIGNEE(S): Finecell Co., Ltd., S. Korea
SOURCE: PCT Int. Appl., 45 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001099220	A1	20011227	WO 2000-KR482	20000524
W: CN, JP, KR, US			RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE	
EP 1290749	A1	20030312	EP 2000-927894	20000524
			R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,	

IE, FI, CY

JP 2003536233 T2 20031202

JP 2002-503968 20000524

PRIORITY APPLN. INFO.:

WO 2000-KR482 W 20000524

AB The present invention is directed to an **electrolyte** film and/or a solid **electrolyte**, having a microporous structure, for a rechargeable cell. According to the present invention, when preparing the **electrolyte** film and/or the solid **electrolyte**, an inorg. absorbent is added in the amount of more than 70% by weight in a **polymer** matrix to prevent the porous structure from being destructed at the cell-assembling process such as lamination or pressing, whereby the absorbing power of a liquid **electrolyte** to the solid **electrolyte** film and the ionic conductivity can be maintained. The inorg. absorbent contained over the specific amount, together with the microporous structure, improves the capacity of absorbing the liquid **electrolyte** and, in particular, works as a structure element of increasing the mech. strength of **electrolyte** film and/or solid **electrolyte**. Therefore, the good ionic conductivity can be maintained even after the assembly of cell.

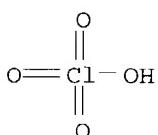
IT 7791-03-9, Lithium perchlorate

RL: DEV (Device component use); USES (Uses)

(methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 25014-41-9, Polyacrylonitrile

RL: MOA (Modifier or additive use); USES (Uses)

(methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**)

RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N



IT 9003-18-3

RL: MOA (Modifier or additive use); USES (Uses)
(nitrile rubber, methods for preparation of microporous solid
electrolytes for rechargeable batteries)

RN 9003-18-3 CAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

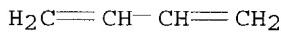
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IT 1344-28-1, Alumina, uses

RL: MOA (Modifier or additive use); USES (Uses)
(porous; methods for preparation of microporous solid **electrolytes**
for rechargeable batteries)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM H01M010-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **battery** microporous solid **electrolyte** prepn

IT Polyvinyl acetals

RL: MOA (Modifier or additive use); USES (Uses)
(formals; methods for preparation of microporous solid **electrolytes**
for rechargeable batteries)

IT Molecular sieves

(mesoporous; methods for preparation of microporous solid
electrolytes for rechargeable batteries)

IT **Battery electrolytes**

Ionic conductivity

Secondary **batteries**

(methods for preparation of microporous solid **electrolytes** for
rechargeable batteries)

IT Carbon black, uses

Clay minerals

EPDM rubber
Fluoropolymers, uses
Mica-group minerals, uses
Nitrile rubber, uses
Phyllosilicate minerals
Polycarbonates, uses
Polycarbosilanes
Polyethers, uses
Polyimides, uses
Polymers, uses
Polyoxyalkylenes, uses
Polysulfones, uses
Polyurethanes, uses
Zeolites (synthetic), uses
RL: MOA (Modifier or additive use); USES (Uses)
(methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**)
IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,
Diethyl carbonate 108-32-7, Propylene carbonate 111-96-6, Diglyme
112-49-2, Triglyme 126-33-0, Sulfolane 143-24-8, Tetraglyme
505-22-6, 1,3-Dioxane 556-65-0, **Lithium** thiocyanate
616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
4437-85-8, Butylene carbonate 7429-90-5, Aluminum, uses 7440-50-8,
Copper, uses 7782-42-5, Graphite, uses 7791-03-9,
Lithium perchlorate 12057-17-9, **Lithium** manganese
oxide limn2o4 12190-79-3, Cobalt **lithium** oxide colio2
14283-07-9, **Lithium** tetrafluoroborate 21324-40-3,
Lithium hexafluorophosphate 29935-35-1, **Lithium**
hexafluoroarsenate 33454-82-9, **Lithium** triflate 90076-65-6
132404-42-3
RL: DEV (Device component use); USES (Uses)
(methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**)
IT 67-63-0, Isopropanol, uses 79-41-4D, Methacrylic acid, esters,
polymers 1309-48-4, Magnesium oxide, uses 1318-93-0,
Montmorillonite, uses 9002-86-2, Polyvinyl chloride 9002-88-4,
Polyethylene 9002-89-5, Polyvinyl alcohol 9002-93-1, Triton x 100
9003-07-0, Polypropylene 9003-27-4, Polyisobutylene 9003-29-6,
Polybutylene 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene
fluoride copolymer 9012-09-3, Cellulose triacetate 12026-53-8,
Paragonite 17831-71-9, Tetraethylene glycol diacrylate 24937-79-9,
Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile
25322-68-3, Peo 31900-57-9, Polydimethylsiloxane 114481-92-4, Maleic
anhydride-vinylidene fluoride copolymer
RL: MOA (Modifier or additive use); USES (Uses)
(methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**)
IT 56-81-5, Glycerol, uses 60-29-7, Ether, uses 64-17-5, Ethanol, uses
67-64-1, Acetone, uses 67-66-3, Chloroform, uses 67-68-5, Dmso, uses
68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 75-09-2,
Dichloromethane, uses 96-47-9, 2-Methyltetrahydrofuran 107-21-1,
Ethylene glycol, uses 108-94-1, Cyclohexanone, uses 109-99-9, Thf,

uses 123-91-1, Dioxane, uses 127-19-5, Dimethylacetamide 141-78-6, Ethyl acetate, uses 680-31-9, Hexamethylphosphoramide, uses 872-50-4, n-Methylpyrrolidone, uses 7732-18-5, Water, uses 25917-35-5, Hexanol 30899-19-5, Pentanol 35296-72-1, Butanol

RL: TEM (Technical or engineered material use); USES (Uses)
(methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**)

IT 9003-18-3

RL: MOA (Modifier or additive use); USES (Uses)
(nitrile rubber, methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses

RL: MOA (Modifier or additive use); USES (Uses)
(porous; methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT



L23 ANSWER 16 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:868873 CAPLUS

DOCUMENT NUMBER: 136:9101

TITLE: Fabrication method for **lithium** secondary
battery with **polymer**
electrolyte prepared by spray method

INVENTOR(S): Yun, Kyung Suk; Cho, Byung Won; Cho, Won Il; Kim, Hyung Sun; Kim, Un Seok

PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea

SOURCE: PCT Int. Appl., 34 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001091222	A1	20011129	WO 2000-KR515	20000522
W: JP, KR, US				

PRIORITY APPLN. INFO.: WO 2000-KR515 20000522

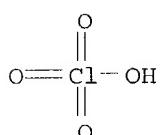
AB The present invention provides a **lithium** secondary **battery** and its fabrication method. More particularly, the present invention provides a **lithium** secondary **battery** comprising a porous **polymer** **electrolyte** and its fabrication method, wherein the **polymer** **electrolyte** is fabricated by the following process: (a) dissolving at least one **polymer** with plasticizers and organic **electrolyte** solvents to obtain at least one **polymeric** **electrolyte** solution; (b) adding the obtained **polymeric** **electrolyte** solution to a barrel of a spray machine, and (c) spraying the **polymeric** **electrolyte** solution onto a substrate using a nozzle to form a porous **polymer** **electrolyte** film. The **lithium** secondary **battery** of the present invention has advantages of

better adhesion with electrodes, good mech. strength, better performance at low and high temps., and better compatibility with organic electrolytes of a lithium secondary battery.

IT 7791-03-9, Lithium perchlorate 9010-76-8,
Acrylonitrile-vinylidene chloride copolymer 24968-79-4,
Acrylonitrile-methyl acrylate copolymer 25014-41-9,
Polyacrylonitrile
RL: DEV (Device component use); USES (Uses)
(fabrication method for lithium secondary battery
with polymer electrolyte prepared by spray method)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 9010-76-8 CAPLUS

CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

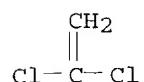
CMF C3 H3 N



CM 2

CRN 75-35-4

CMF C2 H2 Cl2

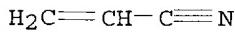


RN 24968-79-4 CAPLUS

CN 2-Propenoic acid, methyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

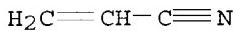
CRN 96-33-3
CMF C4 H6 O2



RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N

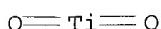


IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication method for lithium secondary
battery with polymer electrolyte prepared by
spray method)

RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 CAPLUS
CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-38
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **polymer electrolyte lithium secondary battery; spray method fabrication polymer electrolyte lithium secondary battery**

IT Inductance
 (electrostatic, spray method; fabrication method for lithium secondary battery with **polymer electrolyte** prepared by spray method)

IT **Battery electrolytes**

 Lamination

 Plasticizers

Polymer electrolytes
 (fabrication method for lithium secondary **battery** with **polymer electrolyte** prepared by spray method)

IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
 (fabrication method for lithium secondary **battery** with **polymer electrolyte** prepared by spray method)

IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
 (filling agent; fabrication method for lithium secondary **battery** with **polymer electrolyte** prepared by spray method)

IT Secondary batteries
 (lithium; fabrication method for lithium secondary **battery** with **polymer electrolyte** prepared by spray method)

IT Alcohols, uses
RL: MOA (Modifier or additive use); USES (Uses)
 (plasticizer; fabrication method for lithium secondary **battery** with **polymer electrolyte** prepared by spray method)

IT Coating process
 (spray; fabrication method for lithium secondary **battery** with **polymer electrolyte** prepared by spray method)

IT 79-20-9, Methyl acetate 105-37-3, Ethyl propionate 109-99-9, Thf, uses 141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 9002-86-2, Pvc 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate 9004-34-6, Cellulose, uses 9004-35-7, Cellulose acetate 9004-36-8 9004-39-1, Cellulose acetate propionate 9010-76-8, Acrylonitrile-vinylidene chloride copolymer 9010-88-2, Ethyl acrylate-methylmethacrylate copolymer 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf 24968-79-4, Acrylonitrile-methyl acrylate copolymer 24980-34-5, Polyethylenesulfide 25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl acetate-vinyl pyrrolidone copolymer 25322-68-3, Peo 25322-69-4, Polypropylene oxide 25667-11-2, Polyethylenesuccinate 26913-06-4, Poly[imino(1,2-ethanediyl)]

28726-47-8, Poly(oxyethylene-oxyethylene) 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 98973-15-0, Poly[bis(2-(2-methoxyethoxyethoxy))-phosphazene]
RL: DEV (Device component use); USES (Uses)
(fabrication method for lithium secondary battery
with polymer electrolyte prepared by spray method)

IT 554-13-2, Lithium carbonate 1304-28-5, Barium oxide bao, uses 1309-48-4, Magnesia, uses 1310-65-2, Lithium hydroxide 1313-59-3, Sodium oxide, uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 7789-24-4, Lithium fluoride, uses 9002-84-0, Ptfe 12003-67-7, Aluminum lithium oxide allio2 12047-27-7, Barium titanium oxide batio3, uses 12057-24-8, Lithia, uses 13463-67-7, Titania, uses 26134-62-3, Lithium nitride
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication method for lithium secondary battery with polymer electrolyte prepared by spray method)

IT 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses 80-73-9, 1,3-Dimethyl-2-imidazolidinone 96-48-0, Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 110-71-4, 1,2-Dimethoxyethane 127-19-5, n,n-Dimethyl acetamide 143-24-8, Tetraethylene glycol dimethyl ether 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 872-50-4, n-Methyl-2-pyrrolidone, uses 4437-85-8, Butylene carbonate 26101-52-0
RL: MOA (Modifier or additive use); USES (Uses)
(plasticizer; fabrication method for lithium secondary battery with polymer electrolyte prepared by spray method)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 17 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:868872 CAPLUS
DOCUMENT NUMBER: 136:9100
TITLE: A lithium secondary battery comprising composite polymer electrolyte fabricated by a spray method
INVENTOR(S): Yun, Kyung Suk; Cho, Byung Won; Cho, Won Il; Kim, Hyung Sun; Kim, Un Seok
PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea
SOURCE: PCT Int. Appl., 38 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001091221	A1	20011129	WO 2000-KR514	20000522
W: JP, KR, US				

PRIORITY APPLN. INFO.: WO 2000-KR514 20000522

AB The present invention provides a novel **composite polymer electrolyte, lithium secondary battery comprising the composite polymer electrolyte** and their fabrication methods. More particularly, the present invention provides the **composite polymer electrolyte** comprising a porous **polymer electrolyte** matrix with particles, fibers or mixture thereof having diams. of 1-3000 nm, **polymers and lithium salt-dissolved organic electrolyte** solns. incorporated into the porous **polymer** matrix. The **composite polymer electrolyte** of the present invention has advantages of better adhesion with electrodes, good mech. strength, better performance at low and high temps., better compatibility with organic **electrolytes** of **lithium secondary battery** and it can be applied to the manufacture of **lithium secondary batteries**.

IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses

RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; **lithium secondary battery** comprising **composite polymer electrolyte** fabricated by spray method)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 CAPLUS

CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)

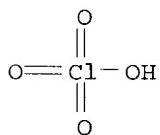
O—Ti—O

IT 7791-03-9, Lithium perchlorate 9010-76-8, Acrylonitrile-vinylidene chloride copolymer 24968-79-4, Acrylonitrile-methylacrylate copolymer 25014-41-9, Polyacrylonitrile

RL: DEV (Device component use); USES (Uses)
(**lithium secondary battery** comprising **composite polymer electrolyte** fabricated by spray method)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 9010-76-8 CAPLUS

CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

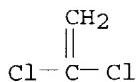
CMF C3 H3 N



CM 2

CRN 75-35-4

CMF C2 H2 Cl2



RN 24968-79-4 CAPLUS

CN 2-Propenoic acid, methyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

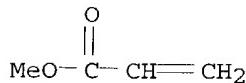
CMF C3 H3 N



CM 2

CRN 96-33-3

CMF C4 H6 O2



RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N



IC ICM H01M010-38
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium secondary battery composite
polymer electrolyte; spray method fabrication
composite polymer electrolyte
IT Inductance
(electrostatic induction spray; lithium secondary
battery comprising composite polymer
electrolyte fabricated by spray method)
IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; lithium secondary battery
comprising composite polymer electrolyte
fabricated by spray method)
IT Battery electrolytes
Plasticizers
Polymer electrolytes
(lithium secondary battery comprising
composite polymer electrolyte fabricated by
spray method)
IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(lithium secondary battery comprising
composite polymer electrolyte fabricated by
spray method)
IT Secondary batteries
(lithium; lithium secondary battery
comprising composite polymer electrolyte
fabricated by spray method)
IT Alcohols, uses

RL: MOA (Modifier or additive use); USES (Uses)
(plasticizer; lithium secondary battery comprising
composite polymer electrolyte fabricated by
spray method)

IT Coating process
(spray; lithium secondary battery comprising
composite polymer electrolyte fabricated by
spray method)

IT 554-13-2, Lithium carbonate 1304-28-5, Barium oxide bao, uses
1309-48-4, Magnesia, uses 1310-65-2, Lithium hydroxide
1313-59-3, Sodium oxide na2o, uses 1344-28-1, Alumina, uses
7631-86-9, Silica, uses 7789-24-4, Lithium fluoride, uses
9002-84-0, Ptfe 12003-67-7, Aluminum lithium oxide allio2
12047-27-7, Barium titanium oxide batio3, uses 12057-24-8, Lithia, uses
13463-67-7, Titania, uses 26134-62-3, Lithium nitride
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; lithium secondary battery
comprising composite polymer electrolyte
fabricated by spray method)

IT 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone 96-49-1,
Ethylene carbonate 105-37-3, Ethyl propionate 105-58-8, Diethyl
carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses
110-71-4, 1,2-Dimethoxyethane 127-19-5, Dimethyl acetamide 141-78-6,
Ethyl acetate, uses 554-12-1, Methyl propionate 616-38-6, Dimethyl
carbonate 623-53-0, Ethyl methyl carbonate 4437-85-8, Butylene
carbonate 7782-42-5, Graphite, uses 7791-03-9, Lithium
perchlorate 9002-86-2, Pvc 9002-88-4, Polyethylene 9003-07-0,
Polypropylene 9003-20-7, Polyvinyl acetate 9004-34-6, Cellulose, uses
9004-35-7, Cellulose acetate 9004-36-8 9004-39-1, Cellulose acetate
propionate 9010-76-8, Acrylonitrile-vinylidene chloride
copolymer 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer
9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidenefluoride
copolymer 12190-79-3, Cobalt lithium oxide colio2
14283-07-9, Lithium tetrafluoroborate 21324-40-3,
Lithium hexafluorophosphate 24937-79-9, Pvdf 24968-79-4
, Acrylonitrile-methylacrylate copolymer 24980-34-5, Polyethylene
sulfide 25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl
acetate-vinylpyrrolidone copolymer 25322-68-3, Peo 25322-69-4,
Polypropylene oxide 25667-11-2, Polyethylenesuccinate 25721-76-0,
Polyethylene glycol dimethacrylate 26913-06-4, Poly[imino(1,2-
ethanediyl)] 28726-47-8, Poly(oxymethylene-oxyethylene) 29935-35-1,
Lithium hexafluoroarsenate 33454-82-9, Lithium
triflate 98973-15-0, Poly[bis(2-(2-methoxyethoxyethoxy))phosphazene]
RL: DEV (Device component use); USES (Uses)
(lithium secondary battery comprising
composite polymer electrolyte fabricated by
spray method)

IT 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses
80-73-9, 1,3-Dimethyl-2-imidazolidinone 143-24-8, Tetraethylene glycol
dimethyl ether 872-50-4, n-Methyl-2-pyrrolidone, uses 26101-52-0
RL: MOA (Modifier or additive use); USES (Uses)
(plasticizer; lithium secondary battery comprising

composite polymer electrolyte fabricated by
spray method)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 18 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:868871 CAPLUS
DOCUMENT NUMBER: 136:9099
TITLE: Fabrication of a lithium secondary battery comprising a hybrid polymer electrolyte prepared by a spray method
INVENTOR(S): Yun, Kyung Suk; Cho, Byung Won; Cho, Won Il; Kim, Hyung Sun; Kim, Un Seok
PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea
SOURCE: PCT Int. Appl., 39 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001091220	A1	20011129	WO 2000-KR513	20000522
W: JP, KR, US				

PRIORITY APPLN. INFO.: WO 2000-KR513 20000522

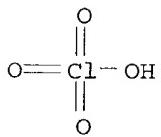
AB The present invention provides a novel hybrid polymer electrolyte, a lithium secondary battery comprising the hybrid polymer electrolyte and their fabrication methods. More particularly, the present invention provides the hybrid polymer electrolyte comprising a porous polymer matrix with particles, fibers or mixture thereof having diams. of 1-3000 nm, polymers and lithium salt-dissolved organic electrolyte solns. incorporated into the porous polymer matrix. The hybrid polymer electrolyte has advantages of better adhesion with electrodes, good mech. strength, better performance at low- and high-temps., better compatibility with organic electrolytes of a lithium secondary battery and it can be applied to the manufacture of lithium secondary batteries.

IT 7791-03-9, Lithium perchlorate 9010-76-8,
Acrylonitrile-vinylidene chloride copolymer 24968-79-4,
Acrylonitrile-methylacrylate copolymer 25014-41-9,
Polyacrylonitrile

RL: DEV (Device component use); USES (Uses)
(fabrication of lithium secondary battery
comprising hybrid polymer electrolyte prepared by
spray method)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

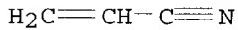


● Li

RN 9010-76-8 CAPLUS
CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)

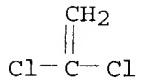
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 75-35-4
CMF C2 H2 Cl2



RN 24968-79-4 CAPLUS
CN 2-Propenoic acid, methyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

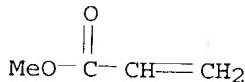
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 96-33-3
CMF C4 H6 O2



RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N

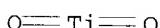


IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication of lithium secondary
battery comprising hybrid **polymer electrolyte**
prepared by spray method)

RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 CAPLUS
CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-38
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium secondary **battery** hybrid **polymer**
electrolyte; spray method hybrid **polymer**
electrolyte lithium secondary **battery**
IT Inductance
(electrostatic, spray method; fabrication of lithium
secondary **battery** comprising hybrid **polymer**
electrolyte prepared by spray method)
IT **Battery electrolytes**
Plasticizers
Polymer electrolytes
(fabrication of lithium secondary **battery**
comprising hybrid **polymer electrolyte** prepared by
spray method)
IT Fluoropolymers, uses

Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(fabrication of lithium secondary **battery**
comprising hybrid **polymer electrolyte** prepared by
spray method)

IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication of lithium secondary
battery comprising hybrid **polymer electrolyte**
prepared by spray method)

IT Secondary **batteries**
(lithium; fabrication of lithium secondary
battery comprising hybrid **polymer electrolyte**
prepared by spray method)

IT Alcohols, uses
RL: MOA (Modifier or additive use); USES (Uses)
(plasticizer; fabrication of lithium secondary
battery comprising hybrid **polymer electrolyte**
prepared by spray method)

IT Coating process
(spray; fabrication of lithium secondary **battery**
comprising hybrid **polymer electrolyte** prepared by
spray method)

IT 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone 96-49-1,
Ethylene carbonate 105-37-3, Ethyl propionate 105-58-8, Diethyl
carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses
110-71-4, 1,2-Dimethoxyethane 127-19-5, Dimethyl acetamide 141-78-6,
Ethyl acetate, uses 554-12-1, Methyl propionate 616-38-6, Dimethyl
carbonate 623-53-0, Ethyl methyl carbonate 4437-85-8, Butylene
carbonate 7782-42-5, Graphite, uses 7791-03-9, Lithium
perchlorate 9002-86-2, Pvc 9002-88-4, Polyethylene 9003-07-0,
Polypropylene 9003-20-7, Polyvinyl acetate 9004-34-6, Cellulose, uses
9004-35-7, Cellulose acetate 9004-36-8 9004-39-1, Cellulose acetate
propionate 9010-76-8, Acrylonitrile-vinylidene chloride
copolymer 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer
9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride
copolymer 12190-79-3, Cobalt **lithium** oxide colico₂
14283-07-9, **Lithium** tetrafluoroborate 21324-40-3,
Lithium hexafluorophosphate 24936-67-2, Polyethylene sulfide
24937-79-9, Polyvinylidene fluoride 24968-79-4,
Acrylonitrile-methylacrylate copolymer 25014-41-9,
Polyacrylonitrile 25086-89-9, Vinyl acetate-vinylpyrrolidone copolymer
25322-68-3, Peo 25322-69-4, Polypropylene oxide 25667-11-2,
Polyethylene succinate 26570-48-9, Polyethylene glycol diacrylate
26913-06-4, Poly[imino(1,2-ethanediyl)] 28726-47-8,
Poly(oxyethyleneoxyethylene) 29935-35-1, **Lithium**
hexafluoroarsenate 33454-82-9, **Lithium** triflate 98973-15-0,
Poly[bis(2-(2-methoxyethoxyethoxy))phosphazene]
RL: DEV (Device component use); USES (Uses)
(fabrication of lithium secondary **battery**
comprising hybrid **polymer electrolyte** prepared by
spray method)

- IT 68-12-2, Dmf, uses 872-50-4, n-Methyl-2-pyrrolidone, uses 26101-52-0
RL: MOA (Modifier or additive use); USES (Uses)
(fabrication of lithium secondary battery
comprising hybrid polymer electrolyte prepared by
spray method)
- IT 554-13-2, Lithium carbonate 1304-28-5, Barium oxide bao, uses 1309-48-4, Magnesia, uses 1310-65-2, Lithium hydroxide 1313-59-3, Sodium oxide na2o, uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 7789-24-4, Lithium fluoride, uses 9002-84-0, Ptfe 12003-67-7, Aluminum lithium oxide allio2 12047-27-7, Barium titanium oxide batio3, uses 12057-24-8, Lithia, uses 13463-67-7, Titania, uses 26134-62-3, Lithium nitride
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication of lithium secondary
battery comprising hybrid polymer electrolyte
prepared by spray method)
- IT 67-64-1, Acetone, uses 67-68-5, Dmso, uses 80-73-9,
1,3-Dimethyl-2-imidazolidinone 143-24-8, Tetraethylene glycol dimethyl ether
RL: MOA (Modifier or additive use); USES (Uses)
(plasticizer; fabrication of lithium secondary
battery comprising hybrid polymer electrolyte
prepared by spray method)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT



L23 ANSWER 19 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:868870 CAPLUS
DOCUMENT NUMBER: 136:9098
TITLE: A lithium secondary battery
comprising a porous polymer separator film
fabricated by a spray method
INVENTOR(S): Yun, Kyung Suk; Cho, Byung Won; Cho, Won Il; Kim, Hyung Sun; Kim, Un Seok
PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea
SOURCE: PCT Int. Appl., 36 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001091219	A1	20011129	WO 2000-KR512	20000522

W: JP, KR, US

PRIORITY APPLN. INFO.: WO 2000-KR512 20000522

AB The present invention provides a lithium secondary
battery and its fabrication method. More particularly, the
present invention provides a lithium secondary battery
comprising a porous polymer separator film and its fabrication
method, wherein the porous polymer separator film is fabricated

by the following process : (a) melting at least one **polymer** or dissolving at least one **polymer** with an organic solvent to obtain at least one **Polymeric melt** or at least one **Polymeric solution**; (b) adding the obtained **Polymeric melt** or **Polymeric solution** to barrels of a spray machine; and (c) spraying the **Polymeric melt** or **Polymeric solution** onto a substrate using a nozzle to form a porous separator film. The **Lithium secondary battery** of the present invention has advantages of better adhesion with electrodes, good mech. strength, better performance at low and high temps., and better compatibility with an organic **electrolyte** solution of a **Lithium secondary battery**

IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; **Lithium secondary battery**
comprising porous **Polymer** separator film fabricated by spray method)

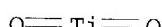
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 CAPLUS

CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)

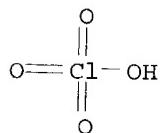


IT 7791-03-9, Lithium perchlorate 9010-76-8,
Acrylonitrile-vinylidene chloride copolymer 24968-79-4,
Acrylonitrile-methylacrylate copolymer 25014-41-9,
Polyacrylonitrile

RL: DEV (Device component use); USES (Uses)
(**Lithium secondary battery** comprising porous
Polymer separator film fabricated by spray method)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



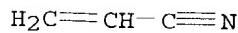
● Li

RN 9010-76-8 CAPLUS

CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)

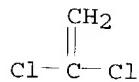
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 75-35-4
CMF C2 H2 Cl2



RN 24968-79-4 CAPLUS
CN 2-Propenoic acid, methyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

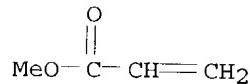
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 96-33-3
CMF C4 H6 O2



RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N



IC ICM H01M010-38
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s) : 38
ST lithium secondary battery porous polymer
separator
IT Inductance
(electrostatic induction; lithium secondary battery
comprising porous polymer separator film fabricated by spray
method)
IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; lithium secondary battery
comprising porous polymer separator film fabricated by spray
method)
IT Secondary battery separators
(lithium secondary battery comprising porous
polymer separator film fabricated by spray method)
IT Alcohols, uses
Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(lithium secondary battery comprising porous
polymer separator film fabricated by spray method)
IT Secondary batteries
(lithium; lithium secondary battery
comprising porous polymer separator film fabricated by spray
method)
IT Coating process
(spray; lithium secondary battery comprising porous
polymer separator film fabricated by spray method)
IT 554-13-2, Lithium carbonate 1304-28-5, Baria, uses
1309-48-4, Magnesia, uses 1310-65-2, Lithium hydroxide
1313-59-3, Sodium oxide na₂o, uses 1344-28-1, Alumina, uses
7631-86-9, Silica, uses 7789-24-4, Lithium fluoride, uses
9002-84-0, Ptfe 12003-67-7, Aluminum lithium oxide allio₂
12047-27-7, Barium titanium oxide batio₃, uses 12057-24-8, Lithia, uses
13463-67-7, Titania, uses 26134-62-3, Lithium nitride
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; lithium secondary battery
comprising porous polymer separator film fabricated by spray
method)
IT 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses
79-20-9, Methyl acetate 80-73-9, 1,3-Dimethyl-2-imidazolidinone
96-48-0, Butyrolactone 96-49-1, Ethylene carbonate 105-37-3, Ethyl
propionate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 127-19-5,

n,n-Dimethylacetamide 141-78-6, Ethyl acetate, uses 143-24-8,
Tetraethylene glycol dimethyl ether 554-12-1, Methyl propionate
616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
872-50-4, n-Methyl-2-pyrrolidone, uses 4437-85-8, Butylene carbonate
7782-42-5, Graphite, uses 7791-03-9, **Lithium**
perchlorate 9002-86-2, Pvc 9002-88-4, Polyethylene 9003-07-0,
Polypropylene 9003-20-7, Polyvinyl acetate 9004-34-6, Cellulose, uses
9004-35-7, Cellulose acetate 9004-36-8 9004-39-1, Cellulose acetate
propionate 9010-76-8, Acrylonitrile-vinylidene chloride
copolymer 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer
9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride
copolymer 12190-79-3, Cobalt **lithium** oxide colio₂
14283-07-9, **Lithium** tetrafluoroborate 21324-40-3,
Lithium hexafluorophosphate 24937-79-9, Pvdf 24968-79-4
, Acrylonitrile-methylacrylate copolymer 24980-34-5, Polyethylene
sulfide 25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl
acetate-vinylpyrrolidone copolymer 25322-68-3, Peo 25322-69-4,
Polypropylene oxide 25667-11-2, Polyethylene succinate 26101-52-0
26913-06-4, Poly[imino(1,2-ethanediyl)] 28726-47-8,
Poly(Oxymethyleneoxyethylene) 29935-35-1, **Lithium**
hexafluoroarsenate 33454-82-9, **Lithium** triflate 98973-15-0,
Poly[bis(2-(2-methoxyethoxyethoxy))phosphazene]
RL: DEV (Device component use); USES (Uses)
(**lithium** secondary **battery** comprising porous
polymer separator film fabricated by spray method)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

DATA

L23 ANSWER 20 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:865066 CAPLUS
DOCUMENT NUMBER: 136:8988
TITLE: Gel **electrolytic** precursor and manufacturing
of non-aqueous secondary **battery**
INVENTOR(S): Hibino, Seiji; Kano, Koji; Iwahisa, Masahiro
PATENT ASSIGNEE(S): Toshiba Battery Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001332303	A2	20011130	JP 2000-150171	20000522
PRIORITY APPLN. INFO.:			JP 2000-150171	20000522

AB The title **battery** consists of a pos. electrode, a neg.
electrode, and a gel **electrolytic** layer disposed between the
pos. and neg. electrodes. The porous gel **electrolytic** precursor
contains a 1st **polymer** which is barely dissol. in a non-aqueous
electrolytic solution and a 2nd **polymer** of gel-formable in
a non-aqueous **electrolytic** solution The volume ratio of the 2nd

polymer to the 1st polymer is in the range of 0.1-5.

The expansion rate of the 1st polymer is $\leq 30\%$.

IT 1344-28-1, Alumina, uses 7791-03-9, Lithium perchlorate 24980-62-9, Acrylonitrile vinyl acetate copolymer 25014-41-9, Polyacrylonitrile 25053-12-7, Acrylonitrile ethylacrylate copolymer

RL: DEV (Device component use); USES (Uses)

(gel electrolytic precursor and manufacturing of non-aqueous secondary battery)

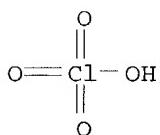
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 24980-62-9 CAPLUS

CN Acetic acid ethenyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 108-05-4

CMF C₄ H₆ O₂



CM 2

CRN 107-13-1

CMF C₃ H₃ N



RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

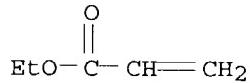
CRN 107-13-1
CMF C3 H3 N



RN 25053-12-7 CAPLUS
CN 2-Propenoic acid, ethyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 140-88-5
CMF C5 H8 O2



CM 2

CRN 107-13-1
CMF C3 H3 N



IC ICM H01M010-40
ICS C08K003-16; C08K003-24; C08K003-32; C08K003-38; C08K005-42;
C08L023-08; C08L025-12; C08L027-16; C08L027-20; C08L033-20;
C08L055-02; C08L071-02
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s) : 72
ST gel **electrolytic precursor** nonaq secondary **battery**
IT Secondary batteries
(gel **electrolytic precursor** and manufacturing of non-aqueous secondary
battery)
IT Carbon black, uses
Carbon fibers, uses
Fluoropolymers, uses
Phenolic resins, uses
Polymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)

(gel electrolytic precursor and manufacturing of non-aqueous secondary battery)

IT 68-12-2, Dmf, uses 872-50-4, N-Methyl-2-pyrrolidone, uses 1313-13-9, Manganese dioxide, uses 1314-62-1, Vanadium oxide, uses 1317-33-5, Molybdenum disulfide, uses 1344-28-1, Alumina, uses 7440-02-0, Nickel, uses 7440-50-8, Copper, uses 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 9004-34-6, Cellulose, uses 9011-17-0 12031-65-1, Lithium nickel oxide (LiNiO₂) 12039-13-3, Titanium disulfide 12057-17-9, Lithium manganese oxide (LiMn₂O₄) 12190-79-3, Lithium cobalt oxide (LiCoO₂) 14283-07-9 21324-40-3 24937-78-8, Ethylene vinyl acetate copolymer 24937-79-9, Polyvinylidene fluoride 24980-62-9, Acrylonitrile vinyl acetate copolymer 25014-41-9, Polyacrylonitrile 25053-12-7, Acrylonitrile ethylacrylate copolymer 25322-68-3, Polyethylene oxide 25322-69-4, Polypropylene oxide 29935-35-1 33454-82-9

RL: DEV (Device component use); USES (Uses)

(gel electrolytic precursor and manufacturing of non-aqueous secondary battery)

IT 78-93-3, Methyl ethyl ketone, uses 108-88-3, Toluene, uses 109-99-9, Tetrahydrofuran, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(gel electrolytic precursor and manufacturing of non-aqueous secondary battery)

L23 ANSWER 21 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:865065 CAPLUS

DOCUMENT NUMBER: 136:8987

TITLE: Gel electrolytic precursor and manufacturing of non-aqueous secondary battery

INVENTOR(S): Hibino, Seiji; Iwahisa, Masahiro; Kano, Koji

PATENT ASSIGNEE(S): Toshiba Battery Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

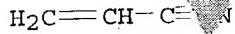
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001332302	A2	20011130	JP 2000-150170	20000522
PRIORITY APPLN. INFO.:			JP 2000-150170	20000522

AB The title battery consists of a pos. electrode, a neg. electrode, and a gel electrolytic layer disposed between the pos. and neg. electrodes. The porous gel electrolytic precursor contains a 1st polymer which is barely dissol. in a non-aqueous electrolytic solution and a 2nd polymer of gel-formable in a non-aqueous electrolytic solution. The precursor is soaked with a non-aqueous electrolytic solution, followed by heating and cooling to form the gel electrolyte. The volume ratio of the 2nd polymer to the 1st polymer is in the range of 0.1-5.

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 10 1
CMF C3 N



IT 1344-28-1, Alumina, uses and miscellaneous

RL: USES (Uses)

(γ -, electrolytes containing, lithium perchlorate-polyacrylonitrile, for secondary batteries)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM H01M010-26

ICS H01M010-40; H01M006-18

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38

ST battery polyacrylonitrile alkali salt electrolyte

IT Batteries, secondary

(magnesium/manganese dioxide-molybdenum and lithium/titanium disulfide-molybdenum, with lithium perchlorate-polyacrylonitrile electrolytes)

IT 7791-03-9, Lithium perchlorate

RL: USES (Uses)

(electrolytes containing polyacrylonitrile and, for secondary batteries)

IT 7439-93-2D, Lithium, complexes with polyacrylonitrile

25014-41-9D, Polyacrylonitrile, lithium complexes

RL: USES (Uses)

(electrolytes, for secondary batteries)

IT 1344-28-1, Alumina, uses and miscellaneous

RL: USES (Uses)

(γ -, electrolytes containing, lithium perchlorate-polyacrylonitrile, for secondary batteries)

=>

Lithium aluminate

RL: MOA (Modifier or additive use); USES (Uses)
(fillers; acrylonitrile-Me methacrylate copolymer and lithium
salt aprotic solvent solution as solid **electrolyte** for secondary
batteries)

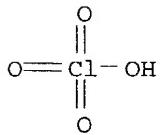
L23 ANSWER 35 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1990:462636 CAPLUS
DOCUMENT NUMBER: 113:62636
TITLE: Secondary batteries with solid
polymer electrolytes
INVENTOR(S): Jiang, Zhe; Yu, Mengqi; Zhu, Wencun; Tian, Qingyuan
PATENT ASSIGNEE(S): Tianjin Normal Training School, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 10 pp.
CODEN: CNXKEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1030671	A	19890125	CN 1987-104786	19870711
PRIORITY APPLN. INFO.:			CN 1987-104786	19870711

AB A thin polyacrylonitrile-alkali metal salt complex film is used as **electrolyte** for **batteries**. Preferably, the mixing mol ratio of polyacrylonitrile:salt is (2-6):1 and the salt is selected from NaI, NaSCN, LiI, LiClO₄, and CF₃SO₃Li. The **batteries** have a light metal (Li or its alloy, Al, Mg, and Zn) anode and a cathode of a metal ion-insertable material such as TiS₂, MnO₂, V₆O₁₃, Mo, and/or C.

IT 7791-03-9, Lithium perchlorate
RL: USES (Uses)
(electrolytes containing polyacrylonitrile and, for secondary
batteries)

RN 7791-03-9 CAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

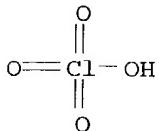
IT 25014-41-9D, Polyacrylonitrile, lithium complexes
RL: USES (Uses)
(electrolytes, for secondary **batteries**)
RN 25014-41-9 CAPLUS

IT 1344-28-1, Alumina, uses 7791-03-9, Lithium perchlorate 24980-62-9, Acrylonitrile vinyl acetate copolymer 25014-41-9, Polyacrylonitrile 25053-12-7, Acrylonitrile ethylacrylate copolymer
RL: DEV (Device component use); USES (Uses)
(gel electrolytic precursor and manufacturing of non-aqueous secondary battery)

RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7791-03-9 CAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

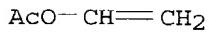


● Li

RN 24980-62-9 CAPLUS
CN Acetic acid ethenyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 108-05-4
CMF C₄ H₆ O₂



CM 2

CRN 107-13-1
CMF C₃ H₃ N



RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

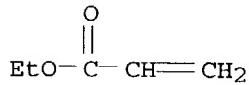
CRN 107-13-1
CMF C3 H3 N



RN 25053-12-7 CAPLUS
CN 2-Propenoic acid, ethyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

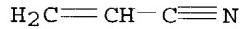
CM 1

CRN 140-88-5
CMF C5 H8 O2



CM 2

CRN 107-13-1
CMF C3 H3 N



IC ICM H01M010-40
ICS C08J009-28; C08L101-00
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
ST gel **electrolytic precursor** nonaq secondary **battery**
IT Secondary batteries
(gel **electrolytic precursor** and manufacturing of non-aqueous secondary
battery)
IT Carbon black, uses
Carbon fibers, uses
Fluoropolymers, uses
Phenolic resins, uses
Polymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(gel **electrolytic precursor** and manufacturing of non-aqueous secondary
battery)
IT 68-12-2, Dmf, uses 872-50-4, N-Methyl-2-pyrrolidone, uses 1313-13-9,
Manganese dioxide, uses 1314-62-1, Vanadium oxide, uses 1317-33-5,

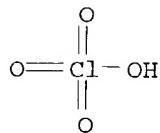
solution to a barrel of an electrospinning machine; and, (c) electropinning the **polymeric electrolyte** solution onto a substrate using a nozzle to form a **polymer electrolyte** film. The **lithium secondary battery** of the present invention has advantages of better adhesion with electrodes, good mech. strength, better performance at low and high temps., and better compatibility with organic **electrolytes** of a **lithium secondary battery**.

IT 7791-03-9, Lithium perchlorate 9010-76-8,
Acrylonitrile-vinylidene chloride copolymer 24968-79-4,
Acrylonitrile-methylacrylate copolymer 25014-41-9,
Polyacrylonitrile

RL: DEV (Device component use); USES (Uses)
(fabrication of **lithium secondary battery**
comprising superfine fibrous **polymer electrolyte**)

RN 7791-03-9 CAPPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

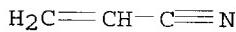
RN 9010-76-8 CAPPLUS

CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

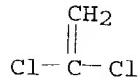
CMF C3 H3 N



CM 2

CRN 75-35-4

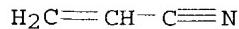
CMF C2 H2 Cl2



RN 24968-79-4 CAPLUS
CN 2-Propenoic acid, methyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

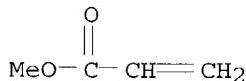
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 96-33-3
CMF C4 H6 O2



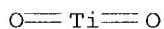
RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N



IT 13463-67-7, Titania, uses
RL: DEV (Device component use); USES (Uses)
(filling agent; fabrication of lithium secondary
battery comprising superfine fibrous polymer
electrolyte)
RN 13463-67-7 CAPLUS
CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



IT 1344-28-1, Alumina, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication of lithium secondary

battery comprising superfine fibrous **polymer electrolyte**)
RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium secondary **battery** superfine fibrous
polymer electrolyte
IT **Battery electrolytes**
Plasticizers
 Polymer electrolytes
 (fabrication of lithium secondary **battery**
 comprising superfine fibrous **polymer electrolyte**)
IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
 (fabrication of lithium secondary **battery**
 comprising superfine fibrous **polymer electrolyte**)
IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
 (fillng agent; fabrication of lithium secondary
 battery comprising superfine fibrous **polymer electrolyte**)
IT Secondary batteries
 (lithium; fabrication of lithium secondary
 battery comprising superfine fibrous **polymer electrolyte**)
IT Alcohols, uses
RL: MOA (Modifier or additive use); USES (Uses)
 (plasticizer; fabrication of lithium secondary
 battery comprising superfine fibrous **polymer electrolyte**)
IT Fibers
RL: DEV (Device component use); USES (Uses)
 (spinning, electrospinning; fabrication of lithium secondary
 battery comprising superfine fibrous **polymer electrolyte**)
IT 79-20-9, Methyl acetate 105-37-3, Ethyl propionate 109-99-9, Thf, uses
141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate
7791-03-9, Lithium perchlorate 9002-86-2, Pvc
9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-20-7, Polyvinyl
acetate 9004-34-6, Cellulose, uses 9004-35-7, Cellulose acetate
9004-36-8 9004-39-1, Cellulose acetate propionate 9010-76-8,
Acrylonitrile-vinylidene chloride copolymer 9010-88-2, Ethyl
acrylate-methyl methacrylate copolymer 9011-14-7, Pmma 9011-17-0,
Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, Cobalt
lithium oxide colio2 14283-07-9, Lithium
tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
24936-67-2, Polyethylenesulfide 24937-79-9, Pvdf 24968-79-4,

Acrylonitrile-methylacrylate copolymer 25014-41-9,
Polyacrylonitrile 25086-89-9, Vinyl acetate-vinylpyrrolidone copolymer
25266-14-2, Oxyethylene-oxyethylene copolymer 25322-68-3, Peo
25322-69-4, Polypropylene oxide 25569-53-3, Polyethylenesuccinate
26913-06-4, Poly[imino(1,2-ethanediyl)] 29935-35-1, Lithium
hexafluoroarsenate 33454-82-9, Lithium triflate 98973-15-0,
Poly[bis(2-(2-methoxyethoxyethoxy)phosphazene]
RL: DEV (Device component use); USES (Uses)
(fabrication of lithium secondary battery
comprising superfine fibrous polymer electrolyte)
IT 7631-86-9, Silica, uses 26101-52-0
RL: MOA (Modifier or additive use); USES (Uses)
(fabrication of lithium secondary battery
comprising superfine fibrous polymer electrolyte)
IT 13463-67-7, Titania, uses
RL: DEV (Device component use); USES (Uses)
(filling agent; fabrication of lithium secondary
battery comprising superfine fibrous polymer
electrolyte)
IT 554-13-2, Lithium carbonate 1304-28-5, Barium oxide bao, uses
1309-48-4, Magnesia, uses 1310-65-2, Lithium hydroxide
1313-59-3, Sodium oxide, uses 1344-28-1, Alumina, uses
7789-24-4, Lithium fluoride, uses 9002-84-0, Ptfe
12003-67-7, Aluminum lithium oxide allio2 12047-27-7, Barium
titanium oxide batio3, uses 12057-24-8, Lithia, uses 26134-62-3,
Lithium nitride
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication of lithium secondary
battery comprising superfine fibrous polymer
electrolyte)
IT 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses
80-73-9, 1,3-Dimethyl-2-imidazolidinone 96-48-0, Butyrolactone
96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7,
Propylene carbonate 110-71-4, 1,2-Dimethoxyethane 127-19-5,
n,n-Dimethyl acetamide 143-24-8, Tetraethylene glycol dimethyl ether
616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
872-50-4, N-Methyl-2-pyrrolidone, uses 4437-85-8, Butylene carbonate
RL: MOA (Modifier or additive use); USES (Uses)
(plasticizer; fabrication of lithium secondary
battery comprising superfine fibrous polymer
electrolyte)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 23 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:851556 CAPLUS
DOCUMENT NUMBER: 135:374195
TITLE: Fabrication of a lithium secondary
battery comprising a superfine fibrous
polymer separator film
INVENTOR(S): Yun, Kyung Suk; Cho, Byung Won; Jo, Seong Mu; Lee, Wha
Seop; Cho, Won Il; Park, Kun You; Kim, Hyung Sun; Kim,

PATENT ASSIGNEE(S) : Un Seok; Ko, Seok Ku; Chun, Suk Won; Choi, Sung Won
 SOURCE: Korea Institute of Science and Technology, S. Korea
 PCT Int. Appl., 34 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001089022	A1	<u>20011122</u>	WO 2000-KR500	20000519
W: JP, KR, US				
JP 2003533862	T2	<u>20031111</u>	JP 2001-585344	20000519
PRIORITY APPLN. INFO.:			WO 2000-KR500	W 20000519

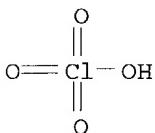
AB The present invention provides a **lithium secondary battery** and its fabrication method. More particularly, the present invention provides a **lithium secondary battery** comprising a super fine fibrous porous **polymer** separator film and its fabrication method, wherein the porous **polymer** separator film is fabricated by the following process: (a) melting at least one **polymer** or dissolving at least one **polymer** with organic solvents to obtain at least one **polymeric melt** or at least one **polymeric solution**; (b) adding the obtained **polymeric melt** or **polymeric solution** to barrels of an electrospinning machine; and (c) discharging the **polymeric melt** or **polymeric solution** onto a substrate using a nozzle to form a porous separator film. The **lithium secondary battery** of the present invention has the advantages of better adhesion with electrodes, good mech. strength, better performance at low and high temps., and better compatibility with organic **electrolyte** solution of a **lithium secondary battery**.

IT 7791-03-9, Lithium perchlorate 9010-76-8,
 Acrylonitrile-vinylidene chloride copolymer 25014-41-9,
 Polyacrylonitrile 25749-57-9, Acrylonitrile-methacrylic acid copolymer

RL: DEV (Device component use); USES (Uses)
 (fabrication of **lithium secondary battery**
 comprising superfine fibrous **polymer** separator film)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 9010-76-8 CAPLUS
CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)

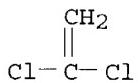
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

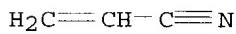
CRN 75-35-4
CMF C2 H2 Cl2



RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

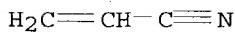
CRN 107-13-1
CMF C3 H3 N



RN 25749-57-9 CAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

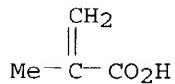
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

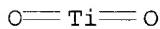
CRN 79-41-4
CMF C4 H6 O2



IT 1344-28-1, Alumina, uses
RL: MOA (Modifier or additive use); USES (Uses)
(fabrication of lithium secondary battery
comprising superfine fibrous polymer separator film)
RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication of lithium secondary
battery comprising superfine fibrous polymer
separator film)
RN 13463-67-7 CAPLUS
CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium secondary battery superfine fibrous
polymer separator
IT Secondary battery separators
(fabrication of lithium secondary battery
comprising superfine fibrous polymer separator film)
IT Alcohols, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(fabrication of lithium secondary battery
comprising superfine fibrous polymer separator film)
IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(fabrication of lithium secondary battery
comprising superfine fibrous polymer separator film)
IT Secondary batteries
(lithium; fabrication of lithium secondary
battery comprising superfine fibrous polymer
separator film)
IT Fibers

RL: DEV (Device component use); USES (Uses)
(spinning, electro-; fabrication of **lithium** secondary
battery comprising superfine fibrous **polymer**
separator film)

IT 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses
79-20-9, Methyl acetate 80-73-9, 1,3-Dimethyl-2-imidazolidinone
96-48-0, Butyrolactone 96-49-1, Ethylene carbonate 105-37-3, Ethyl
propionate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 127-19-5, Dimethyl
acetamide 141-78-6, Ethyl acetate, uses 143-24-8, Tetraethyleneglycol
dimethyl ether 554-12-1, Methyl propionate 616-38-6, Dimethyl
carbonate 623-53-0, Ethylmethyl carbonate 872-50-4,
n-Methyl-2-pyrrolidone, uses 4437-85-8, Butylene carbonate 7782-42-5,
Graphite, uses 7791-03-9, **Lithium** perchlorate
9002-86-2, Pvc 9002-88-4, Polyethylene 9003-07-0, Polypropylene
9003-20-7, Polyvinyl acetate 9004-34-6, Cellulose, uses 9004-35-7,
Cellulose acetate 9004-36-8 9004-39-1, Cellulose acetate propionate
9010-76-8, Acrylonitrile-vinylidene chloride copolymer
9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 9011-14-7, Pmma
9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3,
Cobalt **lithium** oxide colio2 14283-07-9, **Lithium**
tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate
24936-67-2, Polyethylenesulfide 24937-79-9, Pvdf **25014-41-9**,
Polyacrylonitrile 25086-89-9, Vinyl acetate-vinyl pyrrolidone copolymer
25266-14-2 25322-68-3, Peo 25322-69-4, Polypropylene oxide
25569-53-3, Polyethylenesuccinate **25749-57-9**,
Acrylonitrile-methacrylic acid copolymer 26101-52-0 26913-06-4,
Poly[imino(1,2-ethanediyl)] 29935-35-1, **Lithium**
hexafluoroarsenate 33454-82-9, **Lithium** triflate 98973-15-0

RL: DEV (Device component use); USES (Uses)
(fabrication of **lithium** secondary **battery**
comprising superfine fibrous **polymer** separator film)

IT 554-13-2, **Lithium** carbonate **1344-28-1**, Alumina, uses
9002-84-0, Ptfe

RL: MOA (Modifier or additive use); USES (Uses)
(fabrication of **lithium** secondary **battery**
comprising superfine fibrous **polymer** separator film)

IT 1304-28-5, Barium monoxide, uses 1309-48-4, Magnesia, uses 1310-65-2,
Lithium hydroxide 1313-59-3, Sodium oxide na2o, uses
7631-86-9, Silica, uses 7789-24-4, **Lithium** fluoride, uses
12003-67-7, Aluminum **lithium** oxide allio2 12047-27-7, Barium
titanium oxide batio3, uses 12057-24-8, Lithia, uses **13463-67-7**
, Titania, uses 26134-62-3, **Lithium** nitride

RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication of **lithium** secondary
battery comprising superfine fibrous **polymer**
separator film)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 24 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:851555 CAPLUS

DOCUMENT NUMBER: 135:374194
TITLE: Fabrication of composite polymer electrolyte and a lithium secondary battery comprising the composite polymer electrolyte
INVENTOR(S): Yun, Kyung Suk; Cho, Byung Won; Jo, Seong Mu; Lee, Wha Seop; Cho, Won Il; Park, Kun You; Kim, Hyung Sun; Kim, Un Seok; Ko, Seok Ku; Choi, Sung Won
PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea; Chun, Suk Won
SOURCE: PCT Int. Appl., 37 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001089021	A1	20011122	WO 2000-KR499	20000519

W: JP, KR, US

PRIORITY APPLN. INFO.: WO 2000-KR499 20000519

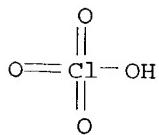
AB The present invention provides a novel composite polymer electrolyte, lithium secondary battery comprising the composite polymer electrolyte and their fabrication methods. More particularly, the present invention provides the composite polymer electrolyte comprising super fine fibrous porous polymer electrolyte matrix with particles having diameter of 1-3000 nm, polymers and lithium salt-dissolved organic electrolyte solns. incorporated into the porous polymer electrolyte matrix. The composite polymer electrolyte of the present invention has advantages of better adhesion with electrodes, good mech. strength, better performance at low and high temps., better compatibility with organic electrolytes of lithium secondary battery and it can be applied to the manufacture of lithium secondary batteries.

IT 7791-03-9, Lithium perchlorate 9010-76-8,
Acrylonitrile-vinylidene chloride copolymer 25014-41-9,
Polyacrylonitrile 25749-57-9, Acrylonitrile-methacrylic acid copolymer

RL: DEV (Device component use); USES (Uses)
(fabrication of composite polymer electrolyte and lithium secondary battery comprising composite polymer electrolyte)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 9010-76-8 CAPLUS

CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

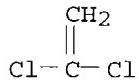
CMF C3 H3 N



CM 2

CRN 75-35-4

CMF C2 H2 Cl2



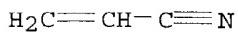
RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N

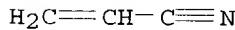


RN 25749-57-9 CAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

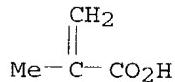
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 79-41-4
CMF C4 H6 O2



IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication of composite polymer
electrolyte and lithium secondary battery
comprising composite polymer electrolyte)

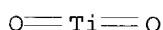
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 CAPLUS

CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium secondary battery composite
polymer electrolyte
IT Battery electrolytes
Plasticizers
Polymer electrolytes
(fabrication of composite polymer
electrolyte and lithium secondary battery
comprising composite polymer electrolyte)
IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(fabrication of composite polymer
electrolyte and lithium secondary battery

comprising composite polymer electrolyte)

IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication of composite polymer
electrolyte and lithium secondary battery
comprising composite polymer electrolyte)

IT Secondary batteries
(lithium; fabrication of composite polymer
electrolyte and lithium secondary battery
comprising composite polymer electrolyte)

IT Alcohols, uses
RL: MOA (Modifier or additive use); USES (Uses)
(plasticizer; fabrication of composite polymer
electrolyte and lithium secondary battery
comprising composite polymer electrolyte)

IT Fibers
RL: DEV (Device component use); USES (Uses)
(spinning, electro-; fabrication of composite polymer
electrolyte and lithium secondary battery
comprising composite polymer electrolyte)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7,
Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl
methyl carbonate 7782-42-5, Graphite, uses 7791-03-9,
Lithium perchlorate 9002-86-2, Pvc 9002-88-4, Polyethylene
9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate 9004-34-6,
Cellulose, uses 9004-35-7, Cellulose acetate 9004-36-8 9004-39-1,
Cellulose acetate propionate 9010-76-8, Acrylonitrile-vinylidene
chloride copolymer 9010-88-2, Ethyl acrylate-methyl methacrylate
copolymer 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene
fluoride copolymer 12190-79-3, Cobalt **lithium** oxide colio2
14283-07-9, **Lithium** tetrafluoroborate 21324-40-3,
Lithium hexafluorophosphate 24936-67-2, Polyethylene sulfide
24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile 25086-89-9,
Vinyl acetate-vinylpyrrolidone copolymer 25266-14-2 25322-68-3, Peo
25322-69-4, Polypropylene oxide 25569-53-3, Polyethylene succinate
25721-76-0, Polyethylene glycol dimethacrylate 25749-57-9,
Acrylonitrile-methacrylic acid copolymer 26570-48-9, Polyethylene glycol
diacrylate 26913-06-4, Poly[imino(1,2-ethanediyl)] 29935-35-1,
Lithium hexafluoroarsenate 33454-82-9, **Lithium**
triflate 98973-15-0
RL: DEV (Device component use); USES (Uses)
(fabrication of composite polymer
electrolyte and lithium secondary battery
comprising composite polymer electrolyte)

IT 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone 105-37-3, Ethyl
propionate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane
127-19-5, Dimethyl acetamide 141-78-6, Ethyl acetate, uses 554-12-1,
Methyl propionate 4437-85-8, Butylene carbonate 12003-67-7, Aluminum
lithium oxide allio2
RL: MOA (Modifier or additive use); USES (Uses)
(fabrication of composite polymer
electrolyte and lithium secondary battery)

comprising composite polymer electrolyte)
IT 554-13-2, Lithium carbonate 1304-28-5, Baria, uses
1309-48-4, Magnesia, uses 1310-65-2, Lithium hydroxide
1313-59-3, Sodium oxide, uses 1344-28-1, Alumina, uses
7631-86-9, Silica, uses 7789-24-4, Lithium fluoride, uses
9002-84-0, Ptfe 12047-27-7, Barium titanium oxide batio3, uses
12057-24-8, Lithia, uses 13463-67-7, Titania, uses 26134-62-3,
Lithium nitride li3n

RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication of composite polymer
electrolyte and lithium secondary battery
comprising composite polymer electrolyte)

IT 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses
80-73-9, 1,3-Dimethyl-2-imidazolidinone 143-24-8, Tetraethylene glycol
dimethyl ether 872-50-4, n-Methyl-2-pyrrolidone, uses 26101-52-0
RL: MOA (Modifier or additive use); USES (Uses)
(plasticizer; fabrication of composite polymer
electrolyte and lithium secondary battery
comprising composite polymer electrolyte)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 25 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:851554 CAPLUS

DOCUMENT NUMBER: 135:374193

TITLE: Fabrication method of lithium secondary
battery with hybrid polymer
electrolyte

INVENTOR(S): Yun, Kyung Suk; Cho, Byung Won; Jo, Seong Mu; Lee, Wha
Seop; Cho, Won Il; Park, Kun You; Kim, Hyung Sun; Kim,
Un Seok; Ko, Seok Ku; Chun, Suk Won; Choi, Sung Won

PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea

SOURCE: PCT Int. Appl., 41 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001089020	A1	20011122	WO 2000-KR498	20000519
W: JP, KR, US				
JP 2003533861	T2	20031111	JP 2001-585342	20000519
PRIORITY APPLN. INFO.:			WO 2000-KR498	W 20000519

AB The present invention provides a novel hybrid polymer
electrolyte, a lithium secondary battery
comprising the hybrid polymer electrolyte
polymer and their fabrication methods. More particularly, the
present invention provides the hybrid polymer
electrolyte comprising superfine fibrous porous polymer
matrix with particles having diameter of 1-3000 nm, polymers and

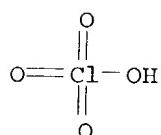
lithium salt-dissolved organic **electrolyte** solns. incorporated into the porous **polymer** matrix. The hybrid **polymer electrolyte** has advantages of better adhesion with electrodes, good mech. strength, better performance at low and high temps., better compatibility with organic **electrolytes** of a lithium secondary **battery** and it can be applied to the manufacture of lithium secondary **batteries**.

IT 7791-03-9, Lithium perchlorate 9010-76-8,
Acrylonitrile-vinylidene chloride copolymer 25014-41-9,
Polyacrylonitrile 25749-57-9, Acrylonitrile-methacrylic acid copolymer

RL: DEV (Device component use); USES (Uses)
(fabrication method of lithium secondary **battery** with hybrid **polymer electrolyte**)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 9010-76-8 CAPLUS

CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

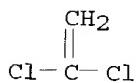
CMF C3 H3 N



CM 2

CRN 75-35-4

CMF C2 H2 Cl2



RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N



RN 25749-57-9 CAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

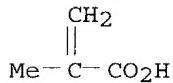
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

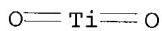
CRN 79-41-4
CMF C4 H6 O2



IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication method of lithium secondary
battery with hybrid polymer electrolyte)
RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 CAPLUS
CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s) : 38
ST lithium secondary **battery** hybrid **polymer**
electrolyte
IT **Battery electrolytes**
Plasticizers
 Polymer electrolytes
 (fabrication method of lithium secondary **battery**
 with hybrid **polymer electrolyte**)
IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
 (fabrication method of lithium secondary **battery**
 with hybrid **polymer electrolyte**)
IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
 (filling agent; fabrication method of lithium secondary
 battery with hybrid **polymer electrolyte**)
IT Secondary **batteries**
 (lithium; fabrication method of lithium secondary
 battery with hybrid **polymer electrolyte**)
IT Alcohols, uses
RL: MOA (Modifier or additive use); USES (Uses)
 (plasticizer; fabrication method of lithium secondary
 battery with hybrid **polymer electrolyte**)
IT Fibers
RL: DEV (Device component use); USES (Uses)
 (spinning, electro-; fabrication method of lithium secondary
 battery with hybrid **polymer electrolyte**)
IT 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone 96-49-1,
Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene
carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane
127-19-5, Dimethyl acetamide 141-78-6, Ethyl acetate, uses 554-12-1,
Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0, Ethylmethyl
carbonate 4437-85-8, Butylene carbonate 7782-42-5, Graphite, uses
7791-03-9, Lithium perchlorate 9002-86-2, Pvc
9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-20-7, Polyvinyl
acetate 9004-34-6, Cellulose, uses 9004-35-7, Cellulose acetate
9004-36-8 9004-39-1, Cellulose acetate propionate 9010-76-8,
Acrylonitrile-vinylidene chloride copolymer 9010-88-2, Ethyl
acrylate-methyl methacrylate copolymer 9011-14-7, Pmma 9011-17-0,
Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, Cobalt
lithium oxide colio2 14283-07-9, Lithium
tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
24937-79-9, Pvdf 24980-34-5, Polyethylene sulfide 25014-41-9,
Polyacrylonitrile 25086-89-9 25266-14-2, Oxyethylene-oxymethylene
copolymer 25322-68-3, Peo 25322-69-4, Polypropylene oxide
25569-53-3, Polyethylene succinate 25721-76-0, Polyethylene glycol
dimethacrylate 25749-57-9, Acrylonitrile-methacrylic acid
copolymer 26570-48-9, Polyethylene glycol diacrylate 26913-06-4,
Poly[imino(1,2-ethanediyl)] 29935-35-1, Lithium

hexafluoroarsenate 33454-82-9, Lithium triflate 98973-15-0

RL: DEV (Device component use); USES (Uses)

(fabrication method of lithium secondary battery
with hybrid polymer electrolyte)

IT 554-13-2, Lithium carbonate 1304-28-5, Baria, uses
1309-48-4, Magnesia, uses 1310-65-2, Lithium hydroxide
1313-59-3, Sodiumoxide, uses 1344-28-1, Alumina, uses
7631-86-9, Silica, uses 7789-24-4, Lithium fluoride, uses
9002-84-0, Ptfe 12003-67-7, Aluminum lithium oxide allio2
12047-27-7, Barium titanium oxide batio3, uses 12057-24-8, Lithia, uses
13463-67-7, Titania, uses 26134-62-3, Lithium nitride
li3n

RL: MOA (Modifier or additive use); USES (Uses)

(filling agent; fabrication method of lithium secondary
battery with hybrid polymer electrolyte)

IT 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses
80-73-9, 1,3-Dimethyl-2-imidazolidinone 143-24-8, Tetraethylene glycol
dimethyl ether 872-50-4, n-Methyl-2-pyrrolidone, uses 26101-52-0

RL: MOA (Modifier or additive use); USES (Uses)

(plasticizer; fabrication method of lithium secondary
battery with hybrid polymer electrolyte)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 26 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:598427 CAPLUS

DOCUMENT NUMBER: 135:183257

TITLE: Method of producing ion conductive laminate for
electrolyte application in
electrochemical cells

INVENTOR(S): Takeuchi, Masataka; Naijo, Shuichi; Ohkubo, Takashi;
Yotsuyanagi, Junji; Hirata, Motoyuki

PATENT ASSIGNEE(S): Japan

SOURCE: U.S. Pat. Appl. Publ., 46 pp., Cont.-in-part of U.S.
Ser. No. 822,465, abandoned.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2001014420	A1	20010816	US 1997-946850	19971008
US 6306509	B2	20011023		
WO 9735351	A1	19970925	WO 1997-JP944	19970321
W: CA, CN, KR, SG, US				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
PRIORITY APPLN. INFO.:			JP 1996-93682	A 19960321
			US 1996-14567P	P 19960401
			US 1997-822465	B2 19970321
			WO 1997-JP944	A2 19970321

AB A laminate comprises an ion conductive material having excellent ion conductivity at room temperature or at lower temps., a small water content, sufficiently high mech. strength and storage stability to allow for handling the ion conductive material in practice, and a form which is easily integrated into an **electrochem.** element or **electrochem.** devices. Also disclosed is a production method thereof, and a method of producing a **battery**, a capacitor or an **electrochem.** element or apparatus using the laminate. The laminate comprises an intermediate layer of an ion conductive material having on the upper and lower portions thereof outer layers having an ion conductivity lower than that of the intermediate layer. Furthermore, at least one of the outer layers is a layer comprising a non-electron-conductive material.

IT 25749-57-9DP, Acrylonitrile-methacrylic acid copolymer, lithium complexes
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(method of producing ion conductive laminate for **electrolyte** application in **electrochem.** cells)

RN 25749-57-9 CAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

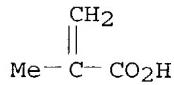
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 79-41-4
CMF C4 H6 O2



IT 1344-28-1, Alumina, uses 7791-03-9, Lithium perchlorate
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(method of producing ion conductive laminate for **electrolyte** application in **electrochem.** cells)

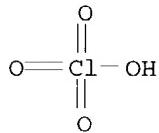
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC B32B003-00; H01M010-26

NCL 429209000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72, 74, 76

ST battery electrolyte ion conductive laminate

IT Capacitors

(double layer; method of producing ion conductive laminate for
electrolyte application in electrochem. cells)

IT Electroluminescent devices

(electrochem.; method of producing ion conductive laminate
for electrolyte application in electrochem. cells)

IT Capacitors

(electrolyte; method of producing ion conductive laminate for
electrolyte application in electrochem. cells)

IT Secondary batteries

(lithium; method of producing ion conductive laminate for
electrolyte application in electrochem. cells)

IT Battery electrolytes

Electric resistance

Electrochromic devices

Electrochromic imaging devices

Ionic conductivity

Laminated materials

Photoelectrochemical cells

Photoelectrodes

(method of producing ion conductive laminate for electrolyte
application in electrochem. cells)

IT Alkali metal salts

Phosphonium compounds

Quaternary ammonium compounds, uses

RL: DEV (Device component use); USES (Uses)

(method of producing ion conductive laminate for electrolyte
application in electrochem. cells)

IT Polyanilines

RL: DEV (Device component use); SPN (Synthetic preparation); PREP

(Preparation); USES (Uses)
(method of producing ion conductive laminate for **electrolyte**
application in **electrochem.** cells)

IT Polyesters, uses
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(method of producing ion conductive laminate for **electrolyte**
application in **electrochem.** cells)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(method of producing ion conductive laminate for **electrolyte**
application in **electrochem.** cells)

IT Plastics, uses
RL: DEV (Device component use); USES (Uses)
(thermoplastics; method of producing ion conductive laminate for
electrolyte application in **electrochem.** cells)

IT Plastics, uses
RL: DEV (Device component use); USES (Uses)
(thermosetting; method of producing ion conductive laminate for
electrolyte application in **electrochem.** cells)

IT 7440-44-0, Activated carbon, uses
RL: DEV (Device component use); USES (Uses)
(activated; method of producing ion conductive laminate for
electrolyte application in **electrochem.** cells)

IT 7429-90-5, Aluminum, uses 7782-42-5, Graphite, uses 9003-07-0,
Polypropylene
RL: DEV (Device component use); USES (Uses)
(method of producing ion conductive laminate for **electrolyte**
application in **electrochem.** cells)

IT 1314-35-8P, Tungsten trioxide, uses 12190-79-3P, cobalt lithium
oxide colio₂ 21324-40-3P, **Lithium** hexafluorophosphate
25233-30-1P, Polyaniline 25721-76-0DP, Polyethylene glycol
dimethacrylate, **lithium** complexes 25749-57-9DP,
Acrylonitrile-methacrylic acid copolymer, **lithium** complexes
106769-84-0P, Cadmium selenide telluride 118889-33-1DP, alkali metal
complexes 355005-92-4DP, **lithium** complexes
RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
(method of producing ion conductive laminate for **electrolyte**
application in **electrochem.** cells)

IT 429-06-1, Tetraethylammoniumtetrafluoroborate 1344-28-1,
Alumina, uses 2926-30-9, Sodium triflate 7791-03-9,
Lithium perchlorate 12597-68-1, stainless steel, uses
14283-07-9, **Lithium** tetrafluoroborate 25038-59-9, Polyethylene
terephthalate, uses 25322-68-3, Polyethylene glycol
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(method of producing ion conductive laminate for **electrolyte**
application in **electrochem.** cells)

IT 7439-93-2DP, **Lithium**, polymer complexes, uses
7440-23-5DP, Sodium, polymer complexes, uses 196618-28-7DP,

alkali metal complexes 355010-46-7DP, alkali metal complexes
RL: SPN (Synthetic preparation); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(method of producing ion conductive laminate for **electrolyte**
application in **electrochem.** cells)

L23 ANSWER 27 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:451291 CAPLUS

DOCUMENT NUMBER: 135:63758

TITLE: **Polymer electrolyte** elements,

manufacture of the elements and rolls of the elements,
the **polymer electrolyte** element
rolls, and manufacture of **batteries**

INVENTOR(S): Amanokura, Hitoshi; Sonobe, Hiroyuki; Uehara, Hideaki;
Saito, Masayasu

PATENT ASSIGNEE(S): Hitachi Chemical Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

X
X
Q

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001167638	A2	20010622	JP 1999-348915	19991208
PRIORITY APPLN. INFO.:			JP 1999-348915	19991208

AB The **electrolyte** elements have a dried reaction layer of a reactive resin on a support, and are prepared by applying the resin on the support and drying when necessary. Preferably, the reactive resin contains a resin having weight average mol. weight 1000-3,000,000, a ethylenic unsatd. photopolymerizable component, and a photopolymn. initiator. The **polymer electrolyte** element rolls are prepared by rolling the elements. The **batteries** are prepared by laminating the **polymer electrolyte** element, with **battery** electrodes with the reaction layer in compact with the cathode or anode.

IT 1344-28-1, Alumina, uses

RL: DEV (Device component use); USES (Uses)
(**compns.** and manufacture of **polymer electrolyte**
components for secondary lithium batteries)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 345663-84-5P 345663-87-8P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP
(Preparation); USES (Uses)
(**compns.** and manufacture of **polymer electrolyte**
components for secondary lithium batteries)

RN 345663-84-5 CAPLUS

CN 2-Propenoic acid, 2-methyl-, (1-methylethylidene)bis(4,1-phenyleneoxy-2,1-ethanediyl) ester, polymer with ethyl 2-propenoate, α -hydro-

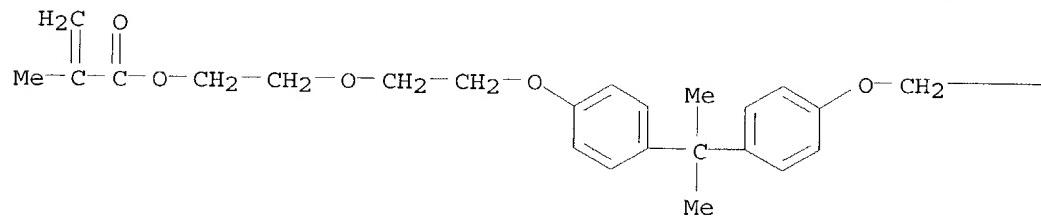
[(1-oxo-2-propenyl)oxy]poly(oxy-1,2-ethanediyl) ether with
2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1), (1-
methylethylidene)bis(4,1-phenyleneoxy-2,1-ethanediyoxy-2,1-ethanediyl)
bis(2-methyl-2-propenoate), methyl 2-methyl-2-propenoate and
2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

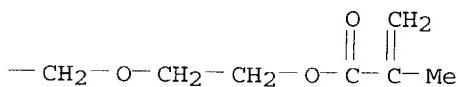
CRN 56744-60-6

CMF C31 H40 O8

PAGE 1-A



PAGE 1-B



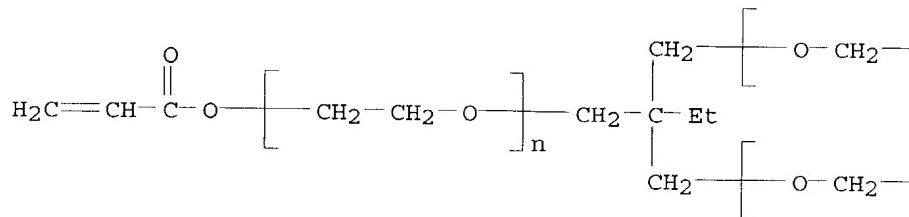
CM 2

CRN 28961-43-5

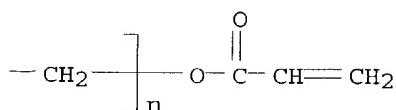
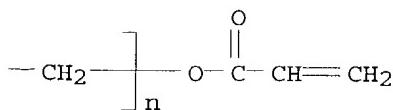
CMF (C₂ H₄ O)_n (C₂ H₄ O)_n (C₂ H₄ O)_n C₁₅ H₂₀ O₆

CCI PMS

PAGE 1-A



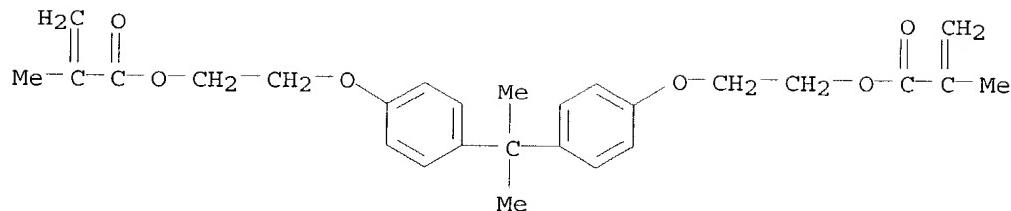
PAGE 1-B



CM 3

CRN 24448-20-2

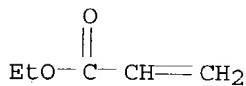
CMF C₂₇ H₃₂ O₆



CM 4

CRN 140-88-5

CMF C₅ H₈ O₂



CM 5

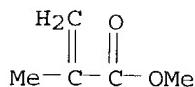
CRN 107-13-1

CMF C₃ H₃ N



CM 6

CRN 80-62-6
CMF C5 H8 O2

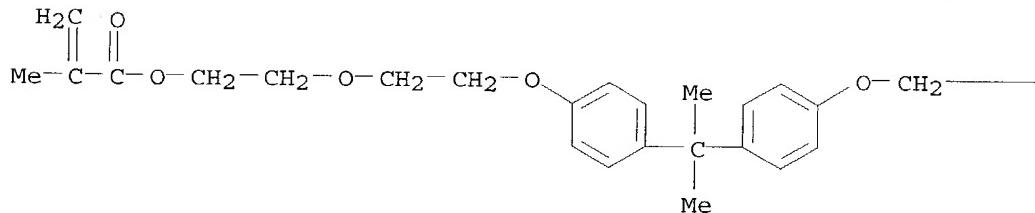


RN 345663-87-8 CAPLUS
CN 2-Propenoic acid, 2-methyl-, (1-methylethylidene)bis(4,1-phenyleneoxy-2,1-ethanediyoxy-2,1-ethanediyl) ester, polymer with ethyl 2-propenoate, α -hydro- ω -[(1-oxo-2-propenyl)oxyl]poly(oxy-1,2-ethanediyl) ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1), methyl 2-methyl-2-propenoate and 2-propenenitrile (9CI) (CA INDEX NAME)

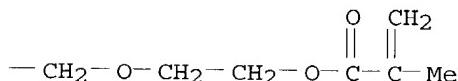
CM 1

CRN 56744-60-6
CMF C31 H40 08

PAGE 1-A



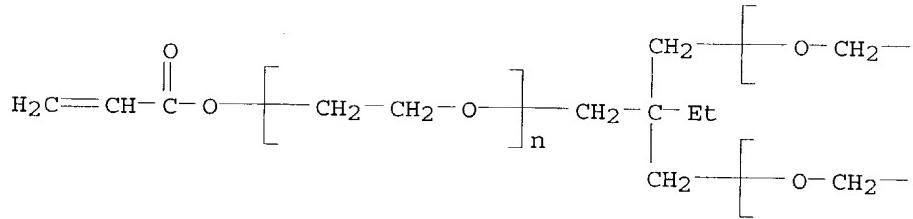
PAGE 1-B



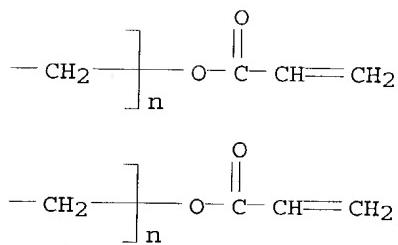
CM 2

CRN 28961-43-5
CMF (C₂ H₄ O)_n (C₂ H₄ O)_n (C₂ H₄ O)_n C₁₅ H₂₀ O₆
CCI PMS

PAGE 1-A

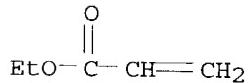


PAGE 1-B



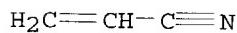
CM 3

CRN 140-88-5
CMF C5 H8 O2



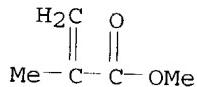
CM 4

CRN 107-13-1
CMF C3 H3 N

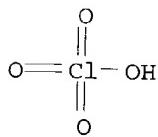


CM 5

CRN 80-62-6
CMF C5 H8 O2



IT 7791-03-9, Lithium perchlorate
RL: DEV (Device component use); USES (Uses)
(supports for polymer electrolyte components for
secondary lithium batteries)
RN 7791-03-9 CAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM H01B005-14
ICS C08J007-04; H01M010-40; C09D201-00; H01B001-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST battery polymer electrolyte element manuf
IT Battery electrolytes
(compns. and manufacture of polymer electrolyte
components for secondary lithium batteries)
IT Polyesters, uses
RL: DEV (Device component use); USES (Uses)
(supports for polymer electrolyte components for
secondary lithium batteries)
IT 84-66-2, Dep 84-74-2, Dbp 1344-28-1, Alumina, uses
7631-86-9, aerosil 50, uses
RL: DEV (Device component use); USES (Uses)
(compns. and manufacture of polymer electrolyte
components for secondary lithium batteries)
IT 345663-84-5P 345663-85-6P 345663-86-7P 345663-87-8P
345663-88-9P
RL: DEV (Device component use); IMF (Industrial manufacture); PREP
(Preparation); USES (Uses)
(compns. and manufacture of polymer electrolyte
components for secondary lithium batteries)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
7791-03-9, Lithium perchlorate 14283-07-9,
Lithium fluoroborate 21324-40-3, Lithium
hexafluorophosphate 25038-59-9, Poly(ethylene terephthalate), uses
RL: DEV (Device component use); USES (Uses)
(supports for polymer electrolyte components for

secondary lithium batteries)

L23 ANSWER 28 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:319645 CAPLUS
DOCUMENT NUMBER: 134:313659
TITLE: **Polymer electrolyte membrane for use in lithium batteries**
INVENTOR(S): Heider, Udo; Oesten, Rudiger; Scrosati, Bruno; Croce, Fausto
PATENT ASSIGNEE(S): Merck Patent G.m.b.H., Germany
SOURCE: Eur. Pat. Appl., 6 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1096591	A1	20010502	EP 2000-122498	20001014
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
TW 477083	B	<u>20020221</u>	TW 2000-89122360	20001024
JP 2001155770	A2	<u>20010608</u>	JP 2000-326338	20001026
CN 1303135	A	<u>20010711</u>	CN 2000-131956	20001026
PRIORITY APPLN. INFO.:			EP 1999-121289	A 19991026
			DE 1999-19951872	A 19991028

AB The invention relates to gel-like membranes comprising ceramic materials and intended for **electrochem.** cells. The **polymer** is selected from the group consisting of polyacrylonitrile, PMMA, polyvinyl chloride, polyvinyl sulfone, polyethylene glycol diacrylate, polyvinyl pyrrolidone, and/or polyvinylidene fluoride, and the ceramic is selected from Al oxide, Si oxide, Ti oxide, and/or Zr oxide.

IT 1344-28-1, Aluminum oxide, uses 7791-03-9,
Lithium perchlorate 13463-67-7, Titania, uses
25014-41-9, Polyacrylonitrile

RL: DEV (Device component use); USES (Uses)
(**polymer electrolyte** membrane for use in
lithium batteries)

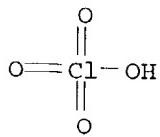
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

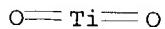
RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 13463-67-7 CAPLUS
CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C₃ H₃ N



IC ICM H01M010-40
ICS B01D071-68; B01D071-38; B01D071-34; B01D071-42; H01M004-62;
H01M002-16; H01G009-02; C08J005-22
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium battery polymer based gel membrane
IT Secondary batteries
(lithium; polymer electrolyte membrane
for use in lithium batteries)
IT Battery electrolytes
Ceramics
(polymer electrolyte membrane for use in
lithium batteries)
IT Fluoropolymers, uses
Polymers, uses
RL: DEV (Device component use); USES (Uses)
(polymer electrolyte membrane for use in
lithium batteries)
IT Vinyl compounds, uses
RL: DEV (Device component use); USES (Uses)
(sulfones, polymers; polymer electrolyte
membrane for use in lithium batteries)

IT Sulfones

RL: DEV (Device component use); USES (Uses)
 (vinyl, polymers; polymer electrolyte
 membrane for use in lithium batteries)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 1314-23-4,
 Zirconia, uses 1344-28-1, Aluminum oxide, uses 7631-86-9,
 Silica, uses 7791-03-9, Lithium perchlorate
 9002-86-2, Polyvinyl chloride 9003-39-8, Polyvinyl pyrrolidone
 9011-14-7, Pmma 13463-67-7, Titania, uses 21324-40-3,
 Lithium hexafluorophosphate 24937-79-9, Polyvinylidene fluoride
 25014-41-9, Polyacrylonitrile 26570-48-9, Polyethylene glycol
 diacrylate 132404-42-3

RL: DEV (Device component use); USES (Uses)
 (polymer electrolyte membrane for use in
 lithium batteries)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 29 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:168300 CAPLUS

DOCUMENT NUMBER: 134:210511

TITLE: All-solid-state electrochemical device and method of manufacturing

INVENTOR(S): Munshi, M. Zafar A.

PATENT ASSIGNEE(S): Lithium Power Technologies, Inc., USA

SOURCE: PCT Int. Appl., 51 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001017052	A2	20010308	WO 2000-US22917	20000821
WO 2001017052	A3	20020221		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
US 6664006	B1	20031216	US 1999-388733	19990902
TW 521450	B	20030221	TW 2000-89116078	20000810
JP 2003508887	T2	20030304	JP 2001-520497	20000821
PRIORITY APPLN. INFO.:			US 1999-388733 A	19990902
			WO 2000-US22917 W	20000821

AB All-solid-state electrochem. cells and batteries
 employing very thin film, highly conductive polymeric

electrolyte and very thin electrode structures are disclosed, along with economical and high-speed methods of manufacturing. A preferred embodiment is a rechargeable lithium **polymer electrolyte battery**. New **polymeric electrolytes** employed in the devices are strong yet flexible, dry and non-tacky. The new, thinner electrode structures have strength and flexibility characteristics very much like thin film capacitor dielec.

material that can be tightly wound in the making of a capacitor. A wide range of **polymers**, or **polymer** blends, characterized by high ionic conductivity at room temperature, and below, are used as the **polymer** base material for making the solid **polymer electrolytes**.

The preferred **polymeric electrolyte** is a cationic conductor. In addition to the **polymer** base material, the **polymer electrolyte compns.** exhibit a conductivity greater than 1×10^{-4} S/cm at 25° or below and contain an elec. conductive **polymer**, a metal salt, a finely divided ionic conductor, and a finely divided inorg. filler material. Certain rechargeable **batteries** of the invention provide high specific energy (250 to 350 Wh/kg) (gravimetric) and energy d. (450 to 550 Wh/L) (volumetric), high cycle life (1000 cycles), low self-discharge and improved safety.

IT 1344-28-1, Alumina, uses 7791-03-9, Lithium perchlorate 25014-41-9, Polyacrylonitrile

RL: DEV (Device component use); USES (Uses)

(all-solid-state **electrochem.** device and method of manufacturing)

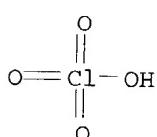
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

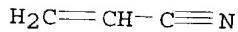
RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N



IC ICM H01M010-40
ICS H01G009-02; H01B001-12
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s) : 38
ST lithium polymer electrolyte battery
; safety lithium polymer electrolyte
battery
IT Conducting polymers
(Li-doped; all-solid-state electrochem. device and method of manufacturing)
IT Battery electrolytes
Ionic conductors
 Polymer electrolytes
 Polymer networks
(all-solid-state electrochem. device and method of manufacturing)
IT Acrylic polymers, uses
Fluoropolymers, uses
Oxides (inorganic), uses
Polyacetylenes, uses
Polyanilines
Polycarbonates, uses
Polyesters, uses
 Polymers, uses
Polyoxyalkylenes, uses
Polysiloxanes, uses
Polythiophenylenes
Selenides
Sulfides, uses
RL: DEV (Device component use); USES (Uses)
(all-solid-state electrochem. device and method of manufacturing)
IT Silicates, uses
RL: MOA (Modifier or additive use); USES (Uses)
(all-solid-state electrochem. device and method of manufacturing)
IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(co-; all-solid-state electrochem. device and method of manufacturing)
IT Secondary batteries
(lithium; all-solid-state electrochem. device and
method of manufacturing)
IT 1313-13-9, Manganese oxide mno₂, uses 1314-35-8, Tungsten trioxide, uses
1314-62-1, Vanadia, uses 1344-28-1, Alumina, uses 7439-93-2,
Lithium, uses 7439-93-2D, Lithium, salt, uses
7439-95-4, Magnesium, uses 7440-09-7, Potassium, uses 7440-23-5,
Sodium, uses 7440-66-6, Zinc, uses 7440-70-2, Calcium, uses
7791-03-9, Lithium perchlorate 9002-83-9,
Poly(chlorotrifluoroethylene) 9002-85-1, Ethene, 1,1-dichloro-,
homopolymer 9003-07-0, Polypropylene 9010-79-1D, Ethylene-propylene
copolymer, fluorinated 9011-14-7, Pmma 9020-32-0 9020-73-9,

Polyethylene naphthalate 12017-00-4, Cobalt oxide coo2 12034-78-5,
Niobium selenide nbse3 12036-21-4, Vanadium oxide vo2 12039-13-3,
Titanium disulfide 12057-17-9, Lithium manganese oxide
(limn₂o₄) 12137-52-9, Vanadium oxide v3o8 12138-17-9, Vanadium sulfide
v2s5 12158-49-5, Chromium oxide cr3o8 12218-36-9, Chromium oxide cr2o5
14024-11-4, Lithium tetrachloroaluminate 14283-07-9,
Lithium tetrafluoroborate 21324-40-3, **Lithium**
hexafluorophosphate 24937-79-9, Pvdf 25014-41-9,
Polyacrylonitrile 25067-58-7, Polyacetylene 25067-61-2,
Polymethacrylonitrile 25101-45-5, Ethylene-chlorotrifluoroethylene
copolymer 25233-30-1, Polyaniline 25322-68-3, Peo 29935-35-1,
Lithium hexafluoroarsenate 30604-81-0, Polypyrrole 33454-82-9,
Lithium triflate 39300-70-4, **Lithium** nickel oxide
90076-65-6 131344-56-4, Cobalt **lithium** nickel oxide
132404-42-3 162684-16-4, **Lithium** manganese nickel oxide
214536-41-1, Cobalt **Lithium** manganese oxide 329028-78-6
329028-80-0
RL: DEV (Device component use); USES (Uses)
(all-solid-state **electrochem.** device and method of manufacturing)
IT 25038-59-9, Polyethylene terephthalate, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(all-solid-state **electrochem.** device and method of manufacturing)
IT 7631-86-9, Fumed silica, uses
RL: DEV (Device component use); USES (Uses)
(colloidal; all-solid-state **electrochem.** device and method of
manufacturing)
IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-44-0, Carbon,
uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 12597-68-1,
Stainless steel, uses 12606-02-9, Inconel
RL: DEV (Device component use); USES (Uses)
(current collector; all-solid-state **electrochem.** device and
method of manufacturing)
IT 37220-89-6, **Lithium** β alumina
RL: MOA (Modifier or additive use); USES (Uses)
(β-type; all-solid-state **electrochem.** device and method
of manufacturing)

L23 ANSWER 30 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:12793 CAPLUS
DOCUMENT NUMBER: 134:74037
TITLE: Improved lithium ion polymer
electrolytes and methods of manufacturing an
electrochemical cell
INVENTOR(S): Munshi, M. Zafar A.
PATENT ASSIGNEE(S): Lithium Power Technologies, Inc., USA
SOURCE: PCT Int. Appl., 43 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

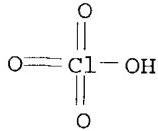
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
WO 2001001507	A1	20010104	WO 2000-US16294	20000626	
W: AU, BR, CA, CN, ID, IL, IN, JP, KR, MX, SG, VN					
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE					
US 6413676	B1	20020702	US 1999-340944	19990628	
JP 2003503822	T2	20030128	JP 2001-506631	20000626	
US 2003091904	A1	20030515	US 2002-187483	20020702	
PRIORITY APPLN. INFO.: US 1999-340944 A 19990628					
WO 2000-US16294 W 20000626					
AB	A dimensionally stable, highly resilient, hybrid copolymer solid-solution electrolyte-retention film for use in a lithium ion battery in one preferred embodiment has a predominantly amorphous structure and mech. strength despite contact with liquid solvent electrolyte. The film is a thinned (stretched), cast film of a homogeneous blend of two or more polymers, one of which is selected for its pronounced solvent retention properties. A very high surface area inorg. filler dispersed in the blend during formation thereof serves to increase the porosity of the film and thereby enhance electrolyte retention. The film is soaked in a solution of liquid polymer with liquid organic solvent electrolyte and lithium salt, for absorption thereof. Use of a crosslinked liquid polymer enhances trapping of mols. of the electrolyte into pores of the film. The electrolyte film is sandwiched between flexible active anode and cathode layers to form the lithium ion battery. Novel methods are provided for forming the electrodes, the polymer substrate, and other elements of the battery.				
IT	1344-28-1, Alumina, uses RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses) (filler; improved lithium ion polymer electrolytes and methods of manufacturing electrochem. cell)				
RN	1344-28-1 CAPLUS				
CN	Aluminum oxide (Al ₂ O ₃) (8CI, 9CI) (CA INDEX NAME)				
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***					
IT	25014-41-9, Polyacrylonitrile RL: DEV (Device component use); USES (Uses) (improved lithium ion polymer electrolytes and methods of manufacturing electrochem. cell)				
RN	25014-41-9 CAPLUS				
CN	2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)				

CM 1

CRN 107-13-1
CMF C3 H3 N



IT 7791-03-9, Lithium perchlorate
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(improved lithium ion polymer electrolytes
and methods of manufacturing electrochem. cell)
RN 7791-03-9 CAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM H01M006-18
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST battery lithium ion polymer
electrolyte
IT Conducting polymers
(Li-doped; improved lithium ion polymer
electrolytes and methods of manufacturing electrochem.
cell)
IT Polyacetylenes, uses
Polyanilines
RL: DEV (Device component use); USES (Uses)
(Li-doped; improved lithium ion polymer
electrolytes and methods of manufacturing electrochem.
cell)
IT Battery electrolytes
Electron beams
Polymer electrolytes
UV radiation
(improved lithium ion polymer electrolytes
and methods of manufacturing electrochem. cell)
IT Acrylic polymers, uses
Fluoropolymers, uses
Polycarbonates, uses
Polyesters, uses
Polyoxalkylenes, uses
Polysiloxanes, uses
Polythiophenylenes
RL: DEV (Device component use); USES (Uses)
(improved lithium ion polymer electrolytes

and methods of manufacturing **electrochem.** cell)
IT Secondary batteries
(lithium; improved lithium ion polymer
electrolytes and methods of manufacturing **electrochem.** cell)
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(oxymethylene-linked; improved lithium ion polymer
electrolytes and methods of manufacturing **electrochem.** cell)
IT Urethanes
RL: TEM (Technical or engineered material use); USES (Uses)
(trifunctional, crosslinking agent; improved lithium ion polymer
electrolytes and methods of manufacturing **electrochem.** cell)
IT 25067-58-7, Polyacetylene 25233-30-1, Polyaniline 30604-81-0,
Polypyrrole
RL: DEV (Device component use); USES (Uses)
(Li-doped; improved lithium ion polymer
electrolytes and methods of manufacturing **electrochem.** cell)
IT 7631-86-9, Fumed silica, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(colloidal, filler; improved lithium ion polymer
electrolytes and methods of manufacturing **electrochem.** cell)
IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-50-8, Copper,
uses 7440-66-6, Zinc, uses 12597-68-1, Stainless steel, uses
RL: DEV (Device component use); USES (Uses)
(current collector; improved lithium ion polymer
electrolytes and methods of manufacturing **electrochem.** cell)
IT 1344-28-1, Alumina, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(filler; improved lithium ion polymer
electrolytes and methods of manufacturing **electrochem.** cell)
IT 1332-29-2, Tin oxide 7440-44-0D, Carbon, intercalation compds., uses
9002-84-0, Ptfe 9003-07-0, Polypropylene 9003-11-6, Ethylene
oxide-propylene oxide copolymer 9011-14-7, Pmma 11126-15-1,
Lithium vanadium oxide 12057-17-9, **Lithium** manganese
oxide LiMn₂O₄ 12423-04-0, **Lithium** vanadium oxide LiV₃O₈
24937-79-9, Pvdf 24968-11-4, Polyethylene naphthalate 25014-41-9
, Polyacrylonitrile 25038-59-9, Polyethylene terephthalate, uses
25067-61-2, Polymethacrylonitrile 25230-87-9 25322-68-3, Peo
25322-68-3D, Peo, oxymethylene-linked 30871-57-9, Propylene-vinylidene
fluoride copolymer 39300-70-4, **Lithium** nickel oxide
39457-42-6, **Lithium** manganese oxide 52627-24-4, Cobalt
Lithium oxide 61673-65-2, **Lithium** niobium selenide
74245-06-0, **Lithium** vanadium sulfide 98973-15-0 131344-56-4,

Cobalt lithium nickel oxide 136511-06-3, Meep 162684-16-4,
Lithium manganese nickel oxide 214536-41-1, Cobalt
lithium manganese oxide

RL: DEV (Device component use); USES (Uses)
(improved lithium ion polymer electrolytes
and methods of manufacturing electrochem. cell)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7,
Propylene carbonate 616-38-6, Dimethyl carbonate 7791-03-9,
Lithium perchlorate 14024-11-4, **Lithium**
tetrachloroaluminate 14283-07-9, **Lithium** tetrafluoroborate
21324-40-3, **Lithium** hexafluorophosphate 29935-35-1,
Lithium hexafluoroarsenate 33454-82-9, **Lithium**
triflate 90076-65-6, **Lithium** bis(trifluoromethanesulfonyl)imid
e 132404-42-3

RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)

(improved lithium ion polymer electrolytes
and methods of manufacturing electrochem. cell)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 31 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:442060 CAPLUS
DOCUMENT NUMBER: 133:46207
TITLE: Microporous solid electrolytes for
lithium secondary batteries
INVENTOR(S): Jang, Dong Hun; Kim, Sa Heum; Kim, Han Jun; Hong, Sung
Min
PATENT ASSIGNEE(S): Finecell Co., Ltd., S. Korea
SOURCE: PCT Int. Appl., 46 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000038263	A1	20000629	WO 1999-KR798	19991221
EP 1171927	A1	20020116	EP 1999-960009	19991221
PRIORITY APPLN. INFO.:			KR 1998-57031	A 19981222
			WO 1999-KR798	W 19991221

AB The present invention relates to a solid electrolyte having a
good conductivity to lithium ion by allowing the liquid components and
lithium salts to be absorbed into the electrolyte film
containing an absorbent added at the time of its preparation and having a
porosity,

a process for preparing the same and a rechargeable lithium cell using the same as an **electrolyte**. As the absorbent, inorg. materials having not more than 40 μm of particle size can be used. As the **polymer** binder, any binder whose solubility against the liquid **electrolyte** is small can be used. A wet process can introduce the porous structure of the **electrolyte** film. The solid **electrolyte** according to the present invention has the ionic conductivity of more than approx. 1 to 3×10^{-3} S/cm at room temperature and low reactivity to lithium metal. The cell is fabricated from the solid **electrolyte** together with electrodes by lamination or pressing methods and, the liquid **electrolyte**, which is decomposed by moisture, is introduced to a cell just before packaging. Therefore, the solid **electrolyte** according to the present invention is not affected by the humidity and temperature conditions during the manufacturing of the

electrolyte film. In addition, the solid **electrolyte** according to the present invention has high thermal, mech. and **electrochem.** stability, and thus is suitable as an **electrolyte** for rechargeable lithium cells.

IT 25014-41-9, Polyacrylonitrile

RL: TEM (Technical or engineered material use); USES (Uses)
(binder; microporous solid **electrolytes** for lithium
secondary batteries)

RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N

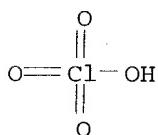


IT 7791-03-9, Lithium perchlorate

RL: DEV (Device component use); USES (Uses)
(microporous solid **electrolytes** for lithium
secondary batteries)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 1344-28-1, Alumina, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(porous, absorbent; microporous solid **electrolytes** for
lithium secondary batteries)
RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IC ICM H01M010-36
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **lithium battery** microporous solid **electrolyte**
IT Cellulose pulp
Cork
(absorbent; microporous solid **electrolytes** for
lithium secondary batteries)
IT Polyurethanes, uses
Zeolites (synthetic), uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(absorbent; microporous solid **electrolytes** for
lithium secondary batteries)
IT Synthetic rubber, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(acrylic-acrylonitrile-butadiene, binder; microporous solid
electrolytes for **lithium secondary batteries**)
IT EPDM rubber
Fluoropolymers, uses
Polycarbonates, uses
Polyethers, uses
Polyimides, uses
Polymers, uses
Polyoxyalkylenes, uses
Polysulfones, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(binder; microporous solid **electrolytes** for **lithium**
secondary batteries)
IT Wood
(flour, absorbent; microporous solid **electrolytes** for
lithium secondary batteries)
IT Polyvinyl acetals
RL: TEM (Technical or engineered material use); USES (Uses)
(formals, binder; microporous solid **electrolytes** for
lithium secondary batteries)
IT Secondary batteries
(lithium; microporous solid **electrolytes** for
lithium secondary batteries)
IT Molecular sieves
(mesoporous, absorbent; microporous solid **electrolytes** for

lithium secondary batteries)

IT Absorbents

Battery electrolytes

(microporous solid electrolytes for lithium secondary batteries)

IT Clays, uses

Mica-group minerals, uses

Minerals, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(particles, absorbent; microporous solid electrolytes for lithium secondary batteries)

IT Binders

(polymers; microporous solid electrolytes for lithium secondary batteries)

IT 9002-88-4 9003-07-0, Polypropylene 9003-53-6, Polystyrene 9004-34-6, Cellulose, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(absorbent; microporous solid electrolytes for lithium secondary batteries)

IT 9002-86-2, Pvc 9002-89-5, Polyvinyl alcohol 9003-21-8, 2-Propenoic acid, methyl ester, homopolymer 9003-27-4, Polyisobutylene 9011-14-7, Pmma 9011-17-0, Vinylidene fluoride-hexafluoropropylene copolymer 9012-09-3, Cellulose triacetate 9016-00-6, Polydimethylsiloxane 17831-71-9, Tetraethyleneglycol diacrylate 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile 25322-68-3 26967-02-2, Poly(butylidene) 114481-92-4, Maleic anhydride-Vinylidene fluoride copolymer

RL: TEM (Technical or engineered material use); USES (Uses)

(binder; microporous solid electrolytes for lithium secondary batteries)

IT 67-68-5, Dmso, uses 68-12-2, uses 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, uses 111-96-6, Diglyme 112-49-2, Triglyme 126-33-0 143-24-8, Tetruglyme 505-22-6, 1,3-Dioxane 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 132404-42-3

RL: DEV (Device component use); USES (Uses)

(microporous solid electrolytes for lithium secondary batteries)

IT 56-81-5, 1,2,3-Propanetriol, uses 60-29-7, Ether, uses 64-17-5, Ethanol, uses 67-64-1, Acetone, uses 67-66-3, uses 71-36-3, Butanol, uses 75-05-8, Acetonitrile, uses 75-09-2, Dichloromethane, uses 107-21-1, 1,2-Ethanediol, uses 108-94-1, Cyclohexanone, uses 123-91-1, Dioxane, uses 127-19-5, Dimethyl acetamide 141-78-6, Acetic acid ethyl

ester, uses 680-31-9, Hexamethylphosphoramide, uses 872-50-4, uses 7732-18-5, Water, uses 25917-35-5, Hexanol 30899-19-5, Pentanol
RL: TEM (Technical or engineered material use); USES (Uses)
(microporous solid **electrolytes** for lithium
secondary batteries)

IT 1318-93-0, Montmorillonite, uses 12026-53-8, Paragonite
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(particles, absorbent; microporous solid **electrolytes** for
lithium secondary batteries)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(porous, absorbent; microporous solid **electrolytes** for
lithium secondary batteries)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 32 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:442059 CAPLUS N/V
DOCUMENT NUMBER: 133:46206
TITLE: Solid **electrolytes** using absorbent for
rechargeable lithium batteries
INVENTOR(S): Jang, Dong Hun; Kim, Sa Heum; Kim, Han Jun; Oh, Seung
Mo
PATENT ASSIGNEE(S): Finecell Co., Ltd., S. Korea
SOURCE: PCT Int. Appl., 37 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000038262	A1	20000629	WO 1999-KR797	19991221
W: CN, JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1145354	A1	20011017	EP 1999-960008	19991221
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2002543553	T2	20021217	JP 2000-590240	19991221
PRIORITY APPLN. INFO.:			KR 1998-57030	A 19981222
			WO 1999-KR797	W 19991221

AB The present invention relates to a solid **electrolyte** having conductivity to lithium ion by providing spaces for liquid component and lithium salts to be absorbed by way of introducing an absorbent to the inside of an **electrolyte** film, a process for preparing the same and a rechargeable lithium cell using the same. As the absorbent, polymers or inorg. materials having not more than 40 μm of particle size can be used. As the polymer binder, any

binder whose solubility against the liquid **electrolyte** is small can be used. The solid **electrolyte** according to the present invention has the ionic conductivity of more than approx. 10⁻⁴ S/cm at room temperature. The cell

is fabricated from the solid **electrolyte** together with electrodes by lamination or pressing methods. The liquid **electrolyte**, which is decomposed by moisture, is introduced to a cell just before packaging. Therefore, the solid **electrolyte** according to the present invention is not affected by the humidity and temperature conditions during the manufacturing of the **electrolyte** film. In addition, the solid **electrolyte** according to the present invention has high mech. strength and little reactivity to lithium metal, and thus is suitable as an **electrolyte** for rechargeable lithium cells.

IT 9003-18-3

RL: TEM (Technical or engineered material use); USES (Uses)
(nitrile rubber, solid **electrolytes** using absorbent for rechargeable lithium batteries)

RN 9003-18-3 CAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

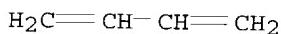
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IT 1344-28-1, Alumina, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(porous, particles; solid **electrolytes** using absorbent for rechargeable lithium batteries)

RN 1344-28-1 CAPLUS

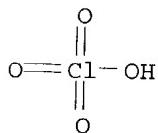
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7791-03-9, Lithium perchlorate

RL: DEV (Device component use); USES (Uses)
(solid **electrolytes** using absorbent for rechargeable lithium batteries)

RN 7791-03-9 CAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 25014-41-9, Polyacrylonitrile
RL: TEM (Technical or engineered material use); USES (Uses)
(solid **electrolytes** using absorbent for rechargeable
lithium batteries)
RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N



IC ICM H01M010-36
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium battery electrolyte absorbent
IT Polysiloxanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(Me; solid **electrolytes** using absorbent for rechargeable
lithium batteries)
IT Synthetic rubber, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(acrylonitrile-butylidene; solid **electrolytes** using absorbent
for rechargeable lithium batteries)
IT Wood
(flour; solid **electrolytes** using absorbent for rechargeable
lithium batteries)
IT Polyvinyl acetals
RL: TEM (Technical or engineered material use); USES (Uses)
(formals; solid **electrolytes** using absorbent for rechargeable
lithium batteries)
IT Secondary batteries
(lithium; solid **electrolytes** using absorbent for
rechargeable lithium batteries)

- IT Molecular sieves
 - (mesoporous; solid **electrolytes** using absorbent for rechargeable lithium batteries)
- IT Clays, uses
 - Mica-group minerals, uses
 - Minerals, uses
 - Zeolites (synthetic), uses
 - RL: TEM (Technical or engineered material use); USES (Uses)
(particles; solid **electrolytes** using absorbent for rechargeable lithium batteries)
- IT Cork
 - (powder; solid **electrolytes** using absorbent for rechargeable lithium batteries)
- IT Absorbents
 - Battery electrolytes**
 - Cellulose pulp
 - (solid **electrolytes** using absorbent for rechargeable lithium batteries)
- IT Carbon black, uses
 - RL: MOA (Modifier or additive use); USES (Uses)
(solid **electrolytes** using absorbent for rechargeable lithium batteries)
- IT EPDM rubber
 - RL: TEM (Technical or engineered material use); USES (Uses)
(solid **electrolytes** using absorbent for rechargeable lithium batteries)
- IT Fluoropolymers, uses
 - RL: TEM (Technical or engineered material use); USES (Uses)
(solid **electrolytes** using absorbent for rechargeable lithium batteries)
- IT Nitrile rubber, uses
 - RL: TEM (Technical or engineered material use); USES (Uses)
(solid **electrolytes** using absorbent for rechargeable lithium batteries)
- IT Polycarbonates, uses
 - RL: TEM (Technical or engineered material use); USES (Uses)
(solid **electrolytes** using absorbent for rechargeable lithium batteries)
- IT Polyethers, uses
 - RL: TEM (Technical or engineered material use); USES (Uses)
(solid **electrolytes** using absorbent for rechargeable lithium batteries)
- IT Polyimides, uses
 - RL: TEM (Technical or engineered material use); USES (Uses)
(solid **electrolytes** using absorbent for rechargeable lithium batteries)
- IT Polymers, uses
 - RL: TEM (Technical or engineered material use); USES (Uses)
(solid **electrolytes** using absorbent for rechargeable lithium batteries)
- IT Polyoxalkylenes, uses
 - RL: TEM (Technical or engineered material use); USES (Uses)

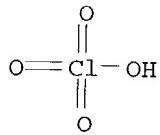
- (solid electrolytes using absorbent for rechargeable lithium batteries)
- IT Polysulfones, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(solid electrolytes using absorbent for rechargeable lithium batteries)
- IT Polyurethanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(solid electrolytes using absorbent for rechargeable lithium batteries)
- IT 9003-18-3
RL: TEM (Technical or engineered material use); USES (Uses)
(nitrile rubber, solid electrolytes using absorbent for rechargeable lithium batteries)
- IT 1318-93-0, Montmorillonite, uses 12026-53-8, Paragonite
RL: TEM (Technical or engineered material use); USES (Uses)
(particles; solid electrolytes using absorbent for rechargeable lithium batteries)
- IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(porous, particles; solid electrolytes using absorbent for rechargeable lithium batteries)
- IT 67-68-5, Dmso, uses 68-12-2, uses 96-47-9, 2-Methyltetrahydrofuran
96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,
Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, uses
111-96-6, Diglyme 112-49-2, Triglyme 126-33-0 143-24-8, Tetraglyme
556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate
623-53-0, Ethyl methyl carbonate 646-06-0, 1,3-Dioxolane 7782-42-5,
Graphite, uses 7791-03-9, Lithium perchlorate
12190-79-3, Cobalt lithium oxide colio2 14283-07-9,
Lithium tetrafluoroborate 21324-40-3, Lithium
hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
33454-82-9, Lithium triflate 90076-65-6 132404-42-3
RL: DEV (Device component use); USES (Uses)
(solid electrolytes using absorbent for rechargeable lithium batteries)
- IT 9002-86-2, Polyvinyl chloride 9002-88-4 9002-89-5, Polyvinyl alcohol
9003-07-0, Polypropylene 9003-27-4, Polyisobutylene 9003-53-6,
Polystyrene 9004-34-6, Cellulose, uses 9011-14-7, Pmma 9011-17-0,
Hexafluoropropylene-vinylidene fluoride copolymer 9012-09-3, Cellulose
triacetate 17831-71-9, Tetraethylene glycol diacrylate 24937-79-9,
Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile
25322-68-3 26967-02-2, Poly(butylidene) 114481-92-4, Maleic
anhydride-vinylidene fluoride copolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(solid electrolytes using absorbent for rechargeable lithium batteries)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 33 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1999:263256 CAPLUS

DOCUMENT NUMBER: 130:340568
TITLE: The characteristics of polymer electrolyte for lithium polymer battery
AUTHOR(S): Park, Soo-Gil; Park, Jong-Eun; Lee, Ju-Seong
CORPORATE SOURCE: Department of Industrial Chemical Engineering,
Chungbuk National University, Chungbuk, S. Korea
SOURCE: Journal of the Korean Electrochemical Society (1999),
2(1), 1-4
PUBLISHER: Korean Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB This paper reports primarily the recent development results of a solid polymer electrolyte, which is a key factor of the secondary battery system, that has been obtained during the process of the development of a polymer type lithium battery. The ionic conductivity of the solid polymer electrolyte, which is composed of polyacrylonitrile and LiClO₄ with Al₂O₃ dissolved as the supporting electrolyte, has been confirmed to be 2.3+10⁻⁴ S/cm at room temperature
IT 1344-28-1, Alumina, uses 7791-03-9, Lithium perchlorate 25014-41-9, Polyacrylonitrile
RL: DEV (Device component use); USES (Uses)
(characteristics of polymer electrolyte for lithium polymer battery)
RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7791-03-9 CAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST polymer electrolyte lithium battery
IT Battery electrolytes
Electric impedance
Ionic conductivity
Polymer electrolytes
(characteristics of polymer electrolyte for
lithium polymer battery)
IT Secondary batteries
(lithium; characteristics of polymer
electrolyte for lithium polymer
battery)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
1344-28-1, Alumina, uses 7791-03-9, Lithium
perchlorate 25014-41-9, Polyacrylonitrile
RL: DEV (Device component use); USES (Uses)
(characteristics of polymer electrolyte for
lithium polymer battery)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 34 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1998:603319 CAPLUS
DOCUMENT NUMBER: 129:278470
TITLE: Solid acrylic polymer-containing
electrolytes for lithium secondary
batteries
INVENTOR(S): Kim, Dong-Won; Kim, Yang-Rook; Oh, Bu-Keun; Baek,
Chang-Wu
PATENT ASSIGNEE(S): Samsung Display Devices Co., Ltd., S. Korea
SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10247417	A2	19980914	JP 1997-317540	19971118
JP 3233602	B2	20011126		
US 6001509	A	19991214	US 1997-971919	19971118
PRIORITY APPLN. INFO.:			KR 1996-54809	A 19961118
			KR 1997-15552	A 19970425
			KR 1997-22924	A 19970603

AB The electrolytes consist of (a) 50-90% acrylonitrile (I)-Me
metharylate (II) copolymer and 10-50% electrolytic solns. containing

Li salts and aprotic solvents, (b) 10-90% I-II-polyoxyethylene oligomer Et ether methacrylate copolymer and 10-90% of the above solns., or (b) 10-90% $[CH_2CR_1(CN)]^x[CH_2CR_1(CO_2R_2)]^y(CH_2CR_1CX)^z$ [R₁ = H, Me; R₂ = alkyl; X = Ph, Cl, F, OCMe (SIC), heterocyclic group, CO₂(CHR₁CH₂)_nMe; n = 1-12] and 10-90% of the above solns. The Li secondary batteries using the electrolytes are also claimed. The electrolytes may contain ceramic fillers and the solns. may be filled in fine porous membranes. The compns. show good mech. properties and good ion conductivity and can be made into thin film electrolytes easily.

IT 25213-88-1P, Acrylonitrile-methyl methacrylate-styrene copolymer
30396-85-1P, Acrylonitrile-methyl methacrylate copolymer
197845-38-8P, Acrylonitrile-methyl methacrylate-polyethylene glycol ethyl ether methacrylate copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(acrylonitrile-Me methacrylate copolymer and lithium salt
aprotic solvent solution as solid electrolyte for secondary batteries)

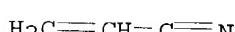
RN 25213-88-1 CAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with ethenylbenzene and 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

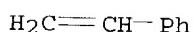
CMF C₃ H₃ N



CM 2

CRN 100-42-5

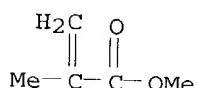
CMF C₈ H₈



CM 3

CRN 80-62-6

CMF C₅ H₈ O₂



RN 30396-85-1 CAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 2-propenenitrile
(9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

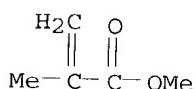
CMF C3 H3 N



CM 2

CRN 80-62-6

CMF C5 H8 O2



RN 197845-38-8 CAPLUS

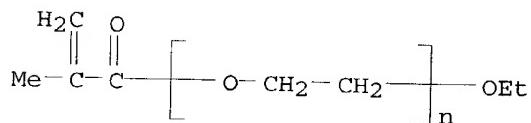
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with
 α -(2-methyl-1-oxo-2-propenyl)- ω -ethoxypoly(oxy-1,2-ethanediyl)
and 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 35625-93-5

CMF (C2 H4 O)n C6 H10 O2

CCI PMS



CM 2

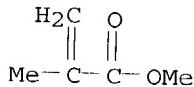
CRN 107-13-1

CMF C3 H3 N



CM 3

CRN 80-62-6
CMF C5 H8 O2

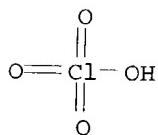


IT 7791-03-9, Lithium perchlorate

RL: TEM (Technical or engineered material use); USES (Uses)
(acrylonitrile-Me methacrylate copolymer and lithium salt
aprotic solvent solution as solid **electrolyte** for secondary
batteries)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 1344-28-1, Alumina, uses

RL: MOA (Modifier or additive use); USES (Uses)
(fillers; acrylonitrile-Me methacrylate copolymer and lithium
salt aprotic solvent solution as solid **electrolyte** for secondary
batteries)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM H01B001-12

ICS C08K003-16; C08K003-22; C08K003-32; C08K003-34; C08K003-36;
C08K003-38; C08K005-06; C08K005-109; C08L033-12; C08L033-20;
H01M010-40.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76

ST solid acrylic polymer **electrolyte** secondary
battery; liq **electrolyte** soln acrylic polymer;

lithium secondary **battery acrylic polymer**
electrolyte; acrylonitrile methyl methacrylate copolymer solid
electrolyte; polyoxyethylene methacrylate copolymer solid
electrolyte; aprotic solvent **polymer electrolyte**
soln; thin film **electrolyte lithium secondary battery**

IT Solid **electrolytes**
(acrylonitrile-Me methacrylate copolymer and lithium salt
aprotic solvent solution as solid **electrolyte** for secondary
batteries)

IT Solvents
(aprotic; acrylonitrile-Me methacrylate copolymer and lithium
salt aprotic solvent solution as solid **electrolyte** for secondary
batteries)

IT Zeolites (synthetic), uses
RL: MOA (Modifier or additive use); USES (Uses)
(fillers; acrylonitrile-Me methacrylate copolymer and lithium
salt aprotic solvent solution as solid **electrolyte** for secondary
batteries)

IT Ceramics
(fillers; acrylonitrile-Me methacrylate copolymer and lithium
salt aprotic solvent solution as solid **electrolyte** for secondary
batteries)

IT Secondary **batteries**
(lithium; acrylonitrile-Me methacrylate copolymer and
lithium salt aprotic solvent solution as solid **electrolyte**
for secondary **batteries**)

IT 25213-88-1P, Acrylonitrile-methyl methacrylate-styrene copolymer
30396-85-1P, Acrylonitrile-methyl methacrylate copolymer
197845-38-8P, Acrylonitrile-methyl methacrylate-polyethylene
glycol ethyl ether methacrylate copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(acrylonitrile-Me methacrylate copolymer and lithium salt
aprotic solvent solution as solid **electrolyte** for secondary
batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7,
Propylene carbonate 110-71-4 616-38-6, Dimethyl carbonate 623-96-1,
Dipropyl carbonate 73506-93-1, Diethoxyethane
RL: NUU (Other use, unclassified); USES (Uses)
(acrylonitrile-Me methacrylate copolymer and lithium salt
aprotic solvent solution as solid **electrolyte** for secondary
batteries)

IT 7791-03-9, Lithium perchlorate 14283-07-9,
Lithium tetrafluoroborate 21324-40-3, Lithium
hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
33454-82-9, Lithium trifluoromethanesulfonate 155812-81-0
RL: TEM (Technical or engineered material use); USES (Uses)
(acrylonitrile-Me methacrylate copolymer and lithium salt
aprotic solvent solution as solid **electrolyte** for secondary
batteries)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 37220-89-6,

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1
CRN 101
CMF C3 N

CH2=CH-C≡N

IT 1344-28-1, Alumina, uses and miscellaneous
RL: USES (Uses)

(γ -, electrolytes containing, lithium perchlorate-polyacrylonitrile, for secondary batteries)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM H01M010-26

ICS H01M010-40; H01M006-18

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST battery polyacrylonitrile alkali salt electrolyte

IT Batteries, secondary

(magnesium/manganese dioxide-molybdenum and lithium/titanium disulfide-molybdenum, with lithium perchlorate-polyacrylonitrile electrolytes)

IT 7791-03-9, Lithium perchlorate

RL: USES (Uses)

(electrolytes containing polyacrylonitrile and, for secondary batteries)

IT 7439-93-2D, Lithium, complexes with polyacrylonitrile

25014-41-9D, Polyacrylonitrile, lithium complexes

RL: USES (Uses)

(electrolytes, for secondary batteries)

IT 1344-28-1, Alumina, uses and miscellaneous

RL: USES (Uses)

(γ -, electrolytes containing, lithium perchlorate-polyacrylonitrile, for secondary batteries)

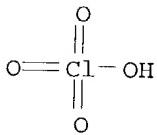
=>

Lithium aluminate

RL: MOA (Modifier or additive use); USES (Uses)
(fillers; acrylonitrile-Me methacrylate copolymer and lithium
salt aprotic solvent solution as solid **electrolyte** for secondary
batteries)

L23 ANSWER 35 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1990:462636 CAPLUS
DOCUMENT NUMBER: 113:62636
TITLE: Secondary batteries with solid
polymer electrolytes
INVENTOR(S): Jiang, Zhe; Yu, Mengqi; Zhu, Wencun; Tian, Qingyuan
PATENT ASSIGNEE(S): Tianjin Normal Training School, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 10 pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1030671	A	19890125	CN 1987-104786	19870711
PRIORITY APPLN. INFO.:			CN 1987-104786	19870711
AB	A thin polyacrylonitrile-alkali metal salt complex film is used as electrolyte for batteries . Preferably, the mixing mol ratio of polyacrylonitrile:salt is (2-6):1 and the salt is selected from NaI, NaSCN, LiI, LiClO ₄ , and CF ₃ SO ₃ Li. The batteries have a light metal (Li or its alloy, Al, Mg, and Zn) anode and a cathode of a metal ion-insertable material such as TiS ₂ , MnO ₂ , V ₆ O ₁₃ , Mo, and/or C.			
IT	7791-03-9, Lithium perchlorate			
	RL: USES (Uses)		(electrolytes containing polyacrylonitrile and, for secondary batteries)	
RN	7791-03-9 CAPLUS			
CN	Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)			



● Li

IT 25014-41-9D, Polyacrylonitrile, lithium complexes
RL: USES (Uses)
(electrolytes, for secondary batteries)
RN 25014-41-9 CAPLUS

IT 1344-28-1, Alumina, uses 7791-03-9, Lithium perchlorate 24980-62-9, Acrylonitrile vinyl acetate copolymer 25014-41-9, Polyacrylonitrile 25053-12-7, Acrylonitrile ethylacrylate copolymer
RL: DEV (Device component use); USES (Uses)
(gel electrolytic precursor and manufacturing of non-aqueous secondary battery)

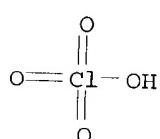
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 24980-62-9 CAPLUS

CN Acetic acid ethenyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 108-05-4

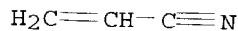
CMF C₄ H₆ O₂



CM 2

CRN 107-13-1

CMF C₃ H₃ N



RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

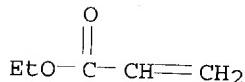
CRN 107-13-1
CMF C3 H3 N



RN 25053-12-7 CAPLUS
CN 2-Propenoic acid, ethyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

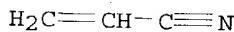
CM 1

CRN 140-88-5
CMF C5 H8 O2



CM 2

CRN 107-13-1
CMF C3 H3 N



IC ICM H01M010-40
ICS C08J009-28; C08L101-00
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
ST gel **electrolytic** precursor nonaq secondary **battery**
IT Secondary batteries
(gel **electrolytic** precursor and manufacturing of non-aqueous secondary
battery)
IT Carbon black, uses
Carbon fibers, uses
Fluoropolymers, uses
Phenolic resins, uses
Polymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(gel **electrolytic** precursor and manufacturing of non-aqueous secondary
battery)
IT 68-12-2, Dmf, uses 872-50-4, N-Methyl-2-pyrrolidone, uses 1313-13-9,
Manganese dioxide, uses 1314-62-1, Vanadium oxide, uses 1317-33-5,